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Breastfeeding Trends in New Zealand from 1997-2002 and Implications for Policy Implementation

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Abstract

This thesis is about breastfeeding trends, examined in the light of national and local breastfeeding policy implementation. It compares the rates of breastfeeding to governmental breastfeeding targets as specified by the Ministry of Health and analyses barriers to implementation at the local level.

Breastfeeding is an important public health activity as it positively impacts on the health of babies and mothers. It also has economic and environmental benefits. Many factors influence breastfeeding and these are discussed within this thesis.

Using Poisson regression this study analyses the Royal New Zealand Plunket Society breastfeeding data to examine New Zealand breastfeeding trends between 1997 and 2002, compares these to the government targets, and examines the relationship between ethnicity and socio-economic status on breastfeeding.

Policies impact breastfeeding rates. This study also examines a small area of policy implementation by examining breastfeeding policy in hospitals, how it is related to the Ministry of Health's Breastfeeding Action Plan, how the plan is being implemented and any issues that pose barriers to implementation.

Finally this study suggests more realistic of what government breastfeeding targets should be, and emphasises how important it is to introduce strategies to improve rates for Maori and more deprived communities. It also gives recommendations, of how to improve the implementation of one breastfeeding policy – the Baby Friendly Hospital Initiative.

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List of Abbreviations

AAP – American Academy of Pediatrics

BF – Breastfeeding

BFHI – Baby Friendly Hospital Initiative

BMI – Body Mass Index

CI – Confidence Interval

DHB(s) – District Health Board(s)

Ex – Exclusive (breastfeeding)

Ex/Full – Exclusive / Full (breastfeeding)

Govt - Government

MOH – Ministry of Health

NZ – New Zealand

NZHIS – New Zealand Health Information Service

OECD – Organisation for Economic Cooperation and Development

OR – Odds Ratio

Plunket – Royal New Zealand Plunket Society

RR – Relative Risk

SIDS – Sudden Infant Death Syndrome

WABA – World Alliance for Breastfeeding Action

WHO – World Health Organisation

CHAPTER 1 - INTRODUCTION

This thesis is about breastfeeding trends, examined in the light of national and local breastfeeding policy implementation. It compares the rates of breastfeeding to breastfeeding targets as specified by the Ministry of Health and analyses barriers to their implementation at the local level.

Background

Breastfeeding rates and trends have not been mapped accurately in New Zealand so there is an incomplete picture of breastfeeding in New Zealand. The Royal New Zealand Plunket Society (Plunket) collects the most detailed data on breastfeeding. This study examines these data from 1997 to 2002. It analyses data from this period, as during this time, Plunket used one information system and consistent definitions of breastfeeding. Previous or subsequent data have used different systems and therefore limit the ability for comparison. There has also been no comprehensive breakdown of breastfeeding by ethnicity and socio-economic status in New Zealand. These factors are considered to be broader determinants of health so it would be appropriate to examine the relationship that these have on breastfeeding status. This study aims to examine the breastfeeding trends between 1997 and 2002, compare these to the government targets, and examine the relationship between ethnicity, socio-economic status and breastfeeding.

Many factors impact on breastfeeding; some affect initiation while others influence continuation. Policy may directly or indirectly impact. Direct policy is policy that deals specifically with breastfeeding, while indirect policy is policy that has many aims of which influences on breastfeeding rates may be one of many outcomes. An example of a direct policy document is the Ministry of Health's document, "Breastfeeding: a Guide to Action" (MOH 2002). This publication details targets for breastfeeding as well as an action plan for improving breastfeeding rates.

However, to implement policy is never an easy process. There are many obstacles and barriers to it. This thesis aims to examine a small area of policy implementation by

examining breastfeeding policy in hospitals, how it is related to the Ministry of Health's Breastfeeding Action Plan, how the plan is being implemented and any issues that pose barriers to implementation.

Breastfeeding has a major impact on the health of children and families. It benefits both infants and mothers (American Academy of Pediatrics, 1997). Breast milk is the perfect food for infants up until the age of 6 months as it contains the correct proportion of nutrients for the growing child. Research indicates that there is strong evidence to suggest that breast milk decreases the incidence of many infectious diseases (Wright et al 1998). Other possible health benefits include the reduction in the prevalence of allergic conditions and Sudden Infant Death Syndrome in children. (Oddy, Holt et al. 1999; Sears, Greene et al. 2002; Sullivan and Barlow 2001). Some studies also show a weak positive effect on the intelligence of children (Anderson, Johnstone et al. 1999). Breastfeeding also contributes to health for mothers as it reduces postpartum bleeding and possibly reduces the risk of ovarian and breast cancer (Rosenblatt and Thomas 1993, Bernier, Plu-Bureau et al. 2000, Yen, Yen et al. 2003).

The Royal New Zealand Plunket Society (Plunket) has the best breastfeeding records in New Zealand but, before 1997, these have not been studied in detail. There has been difficulty studying trends for several reasons. These are as follows:

1. Prior to the mid 1990s there was no consistency in breastfeeding definitions. In the 1990s Plunket realised that the term 'breastfeeding' was inadequate to describe all the different breastfeeding behaviours. Using the model established by Labbok and Krasovec (1990), the Plunket Society established breastfeeding definitions in 1992 that were further refined in 1996 to include the exclusive category (Labbok and Krasovec 1990). These definitions are found in Appendix 1.
2. Breastfeeding status was always recorded at the first contact that the Plunket nurse made with the family. In the 1990s there were changes in the health care system so that the length of postnatal midwifery care increased. This resulted in delaying the first contact with the mother and infant. In 1993, over 92 percent of babies seen by a Plunket nurse, were seen by three weeks of age (Essex, Smale et al. 1995). However, by 1997 nationwide figures indicate that

the average age of the baby at the initial visit by the Plunket nurse was much later with 65 percent of infants seen by four weeks, 82 percent by six weeks and 96 percent by ten weeks (Baldwin, Gafford et al. 1998).

In 1997 an article in NZ Doctor written by Sinclair did not reflect the split between exclusive and full definitions and instead only examined "full" breastfeeding" instead of examining a combination of "full" and "exclusive" breastfeeding when comparing the data to previous years (Sinclair 1997). As a result, it was assumed that "full" breastfeeding rates were dropping when the real picture required further analysis to examine if this was the case. The other assumption this article made was that all first Plunket contacts occurred at two weeks of age whereas this was not the case (as discussed above). This article has subsequently been cited thus spreading the belief that breastfeeding rates were falling (Turner, Hounsell et al. 1999).

Study Aims

This study has the following aims:

1. To describe overall breastfeeding trends in New Zealand from 1997 to 2002 for babies at ages;
    - Six weeks
    - Three months
    - Six months
2. To further break this descriptive data down examining it by:
    - Ethnicity
    - Socio-economic geographical location using Crampton et. al's Deprivation Index (Crampton et al 2000).
3. Compare these rates to the Ministry of Health's breastfeeding targets
4. Examine the role of public policy on breastfeeding
5. Examine one aspect of policy implementation on breastfeeding initiation – hospital breastfeeding policy

Method

The breastfeeding rates are examined using the Plunket breastfeeding data. They are analysed using Poisson regression, which incorporates a log link function, and robust standard errors.

The implementation of breastfeeding policy is examined using a qualitative approach. Within this thesis, this portion of the study is not meant to be an in-depth qualitative approach. It consists of interviews with six lactation consultants from different District Health Boards around the country and highlights implementation issues.

Thesis Outline

In this thesis, Chapter 2 examines the literature on why breastfeeding is important, what impact breastfeeding makes on the health of infants and their mothers.

Chapter 3 looks at the contextual factors that influence initiation and continuation of breastfeeding. Such factors include the personal factors as well as the community and socio-political factors. It also puts New Zealand breastfeeding rates in international perspective.

The following chapter (Chapter 4) discusses policy issues and breastfeeding. It gives the history of when different policies were introduced and the impact of these on breastfeeding within New Zealand and internationally.

Chapter 5 details the breastfeeding rates over the study period. These are examined overall, by ethnicity and socio-economic status. This chapter also examines the implementation of breastfeeding policy within the hospital setting. This chapter discusses the method of obtaining the data as well.

Chapter 6 discusses these results in light of the Ministry of Health breastfeeding targets, and Chapter Six makes recommendations intended to assist in achieving the Ministry of Health breastfeeding targets based on the findings presented in this thesis.

The final chapter concludes the thesis and discusses unanswered questions and possible future research.

CHAPTER 2 - IMPORTANCE OF BREASTFEEDING

Introduction

Breastfeeding or formula feeding are the two main ways that families choose to feed their newborn infants. While infants grow and develop with either method of feeding, many benefits are associated with breastfeeding that are not associated with formula feeding.

The advantages of breastfeeding affect infants, mothers, families and society. For the infant, these include health, nutritional, developmental, immunological, and psychological benefits. Breastfeeding also contributes to the health of mothers as it reduces postpartum bleeding and possibly reduces the risk of ovarian and breast cancer. Some studies have also indicated that it has economic, social and environmental benefits (American Academy of Pediatrics 1997). These benefits have been recognised by the World Health Organisation which put forward the Innocenti Declaration in Florence (WHO 1990) to protect, promote and support breastfeeding along with a code for governing the marketing of breast milk substitutes. The WHO Innocenti Declaration was produced and adopted by participants. New Zealand was a participant of this forum.

This chapter will examine the benefits of breastfeeding for

- The infant
- The mother
- Society

Benefits to the Infant

Nutrition

The primary reason for breastfeeding infants is nutritional as breastfeeding gives infants the right amount of fatty acids, water, lactose, and amino acids in the form of protein, carbohydrates and fats for digestion, growth and brain development (Riordan and Auerbach 1993). Breast milk has been called the perfect food for infants as it contains all the necessary nutrients for a growing infant in a readily bio available

form, as well as providing the infant with essential vitamins and minerals. Another feature of breast milk is that it changes composition depending on the age and needs of the baby. In hotter climates it is more watery to supply the increase in fluids required. The early milk is called colostrum and this is richer in protein and minerals but has a lower concentration of carbohydrates compared to mature milk. Over time (anything from three to four days to approximately twelve days) the milk changes to mature milk to reflect the infant's needs. Both colostrum and mature milk contain immunoglobulins, which help to provide the infant with protection against infections.

The complexity of breast milk is becoming increasingly apparent with ongoing research (Riordan and Auerbach 1993). Infant formula companies recognise the unique and valuable properties of breast milk and are constantly trying to adapt their formulae to imitate breast milk as much as possible. However, human milk contains at least 100 ingredients not currently found in infant formula (Riordan and Auerbach 1993).

Epidemiological studies provide strong evidence to suggest that breastfeeding provides advantages with regard to general health, growth and development and significantly decreases the risk for a large number of acute and chronic diseases for the child. This is because breast milk contains maternal immunoglobulins (of importance to the infant as their immune system is immature), lymphocytes, as well as other non cellular components such as lyosomes and lactoferrin (Ainbinder, Andrew et al. 2003)

The more the infant feeds, the more breast milk is made, and therefore the supply of breast milk meets the nutritional needs of the infant in the first six months prior to the introduction of solids. This is known as the supply and demand principle (Riordan and Auerbach 1993).

Health

The World Health Organisation (WHO 2000) produced a paper which analysed many studies to assess the effects of breastfeeding on child mortality. It was found that in the first six months of life, breastfeeding assisted in the protection against infectious

diseases, particularly diarrhoea and acute respiratory infections. Wright et al examined the rates of community infant illness a year after a programme to increase breastfeeding rates was introduced to the Navajo Indians. The rate of exclusive breastfeeding increased from 16.4 percent to 54.6 percent over a year. At the same time the rates of childhood pneumonia and gastro-enteritis declined 32.2 percent and 14.6 percent respectively (Wright, Bauer et al. 1998).

The following gives further details on the protective effects of breastfeeding on specific infectious diseases and the effect of breastfeeding on the rate of infection in both third world countries and developed countries comparable to New Zealand:

Diarrhoea

Many studies demonstrate the impact of breastfeeding on the reduction of diarrhoeal disease (Molbak, Gottschau et al. 1994; Wright, Bauer et al. 1998). Most of these studies have been performed in third world countries where diarrhoeal disease has a major impact on mortality and morbidity. One such study (Brown, Black et al. 1989) demonstrated that exclusive breastfeeding resulted in the greatest protection against diarrhoeal disease whilst the addition of other fluids increased the prevalence of disease. Discontinuation of any breastfeeding in the first six months also increased the incidence and prevalence of diarrhoea. A problem with this study was that while it demonstrated an association, the numbers involved in the study were low (153 infants) with only 12 percent of the sample exclusively breastfed at one month of age.

Dewey et al. (Dewey, Heinig et al. 1995) showed that diarrhoeal illness was almost half as common in infants who were breastfed compared to formula fed infants in relatively affluent and highly educated populations. In this study the groups were very carefully matched for many confounding factors. These included socio-economic status and educational level. Previous studies tended to require extensive statistical analysis to allow for these. A further study undertaken in the United States also demonstrated a dose–response relationship between breastfeeding and the protection against the development of diarrhoea (Scariati, Grummer-Strawn et al. 1997). This study showed that an infant did not have to be exclusively breastfed to gain protection. However the more breast milk the child received in the first six months of

life, the less the likelihood of developing diarrhoea. As this study was a first world study, it is of relevance to the New Zealand population.

Many studies have shown that the there is a protective factor of breastfeeding specifically against rotovirus. Newburg et al (Newburg, Peterson et al. 1998) showed that human milk contained a rotovirus antibody, which is thought to bind specifically to the rotavirus, preventing it from reproducing. However, another study casts doubt on the long-term protectiveness of breastfeeding against rotovirus (Clemens, Rao et al. 1993). The authors found that while breastfeeding appeared to protect against rotovirus in the first year of life, this result was not found to be true in the second year of life where the risk of rotovirus appeared greater in children who were breastfed than in non-breastfed children. In spite of this, the protective factor of breastfeeding in the first year of life is still important because infants are more likely to die from such infections due to their vulnerability to such disease. Their size means that their electrolyte balance is more easily disturbed.

Another diarrhoeal disease that breastfeeding seems to protect against is shigellosis. Ahmed et al (Ahmed, Clemens et al. 1992) undertook a case-control study where two hundred and sixty-nine cases of children with shigellosis were compared to 819 controls without shigella or other invasive diarrhoeal illnesses. The odds ratio relating breastfeeding to shigellosis after being adjusted for potential confounding factors was 0.48 (95% CI = 0.32, 0.72) indicating a substantial protective effect.

Respiratory infections

Wright et al in their study also examined the relationship between breastfeeding and subsequent experiences of lower respiratory tract infections (Wright, Holberg et al. 1989). This demonstrated that breastfeeding was associated with a decreased incidence of wheezing type illnesses during the first four months of life but the child needed to be breastfed for more than a month for this association to occur. Other studies also demonstrated this association (Beaudry, Dufour et al. 1995; Wright, Bauer et al. 1998). Cesar et al (Cesar, Victora et al. 1999) examined the association between the development of pneumonia and breastfeeding and found that infants who received no breastmilk were more likely to be admitted to hospital for pneumonia

than infants exclusively breastfed. This was particularly the case for infants under the age of three months where the relative risk of admission to hospital with pneumonia for non-breastfed infants was 61, decreasing to 10 after this age.

Otitis Media

Duncan, Ey et al. (1993) undertook a study designed to assess the relationship between breastfeeding and recurrent otitis media in the first 12 months of life. They analysed the health records of 1220 infants examining the duration and exclusiveness of breastfeeding. Information on potential confounding factors for otitis media was also analysed. This included socioeconomic status, gender, day care use, maternal smoking and family history of allergy. Outcome variables included acute and recurrent otitis media (defined as three or more acute episodes in a six month period or four or more episodes in a twelve month period). Results indicated that infants who were exclusively breastfed for more than four months had half the mean number of episodes of acute otitis media compared to infants who were not breastfed and 40 percent less than those infants who received additional supplementary foods prior to four months of age. The study also demonstrated that infants who were exclusively breastfed for six months or more had less than half the rate of recurrent otitis media compared to infants who were exclusively breastfed for less than four months of age. This relationship was independent of the other potential confounding factors that were considered. Other studies demonstrated similar findings (Saarinen, 1982; Beaudry, 1995; Duffy 1997).

Other Health Conditions impacted by Breastfeeding

Atopy

Breast-feeding also appears to protect against some atopy. Oddy et al (Oddy, Holt et al. 1999) examined the relationship between the duration of exclusive breastfeeding and the development of asthma related outcomes of children at the age of six years. After they adjusted for confounding factors of sex, gestational age, smoking in the household and early childcare they found that the introduction of milk other than breast milk prior to four months of age was a significant risk factor for all asthma and atopy related illnesses in children at the age of six years. This is in contrast to Sears et al (Sears, Greene et al. 2002) who demonstrated an association with breastfeeding and

an increase in the occurrence of asthma. The breastfeeding data for this study was collected in 1972-73 and was collected in the context of breastfeeding practices at that time. This study did not specify the amount of breastfeeding that the child received, therefore there is a possibility that the children received complementary feeds. It is possible that mixed feeding influences the risk of developing asthma. Sears et al's (2002) study is of interest as all of the recruits were born in Dunedin, New Zealand.

In contrast, meta-analytic studies demonstrated that breastfeeding decreased the incidence of allergic conditions such as asthma, hayfever and eczema. The first of these demonstrated exclusive breastfeeding during the first three months after birth protects against allergic rhinitis in children both with and without a family history of atopy. This meta-analysis examined six studies and found that the summary odds ratio for the protective effect of breastfeeding was 0.74 (95% CI = 0.54, 1.01). This protective association was substantial although of borderline statistical significance. The authors felt that larger prospective studies with strict methodology and longer periods of follow-up were needed (Mimouni Bloch, Mimouni et al. 2002). The second meta-analysis examined the controversy of breastfeeding and the risk of bronchial asthma in childhood. This demonstrated that exclusive breastfeeding during the first months after birth was associated with lower asthma rates during childhood. This showed a protective effect of exclusive breastfeeding (Gdalevich, Mimouni et al. 2001). It did not examine the effect of breastfeeding on asthma when the mother only partially or fully breastfed as opposed to exclusively breastfed.

Obesity

There is some evidence that breastfeeding may decrease the prevalence of childhood obesity which is becoming one of the most common nutritional disorders in industrialised countries (von Kries, Koletzko et al. 1999). Childhood obesity results in a high risk of the child being an obese adult and therefore at greater risk of associated health complications of heart disease, hypertension and Type II Diabetes. Previous studies have not shown a significant effect of breastfeeding on obesity but they were based on small samples and many failed to control for confounding variables (Dietz 2001). In contrast, more recent studies have demonstrated a significant association between breastfeeding and body mass index (BMI). The first of these, which was a

study performed in the United States (Hediger, Overpeck et al. 2001) showed that breastfeeding appeared to protect against a BMI between the 85th and 95th percentiles (percentiles taken from people living in the United States) but did not show a statistically significant association between history of breastfeeding and the reduction in risk of the development of obesity. In this study, a BMI that was between the 85th and 95th percentile was considered at risk of being overweight while a BMI of more than the 95th percentile was considered obese. Gillman et al (Gillman, Rifas-Shiman et al. 2001) in contrast found that the history of breastfeeding was important as children who were exclusively or predominantly breastfed for the first six months of life had a significantly lower risk of becoming overweight than children who were mostly fed formula. This study adjusted for many confounding factors such as amount of exercise, maternal BMI and dietary intake. Von Kries (von Kries, Koletzko et al. 1999) in a large study looking at 134,577 children at school entry also found that the prevalence of obesity of children who were never breastfed was 4.5 percent as compared with 2.8 percent in breastfed children. This association also showed a dose-response relationship. This study appears to have controlled for the potential confounding factors of education level of parents, maternal smoking, birth weight and gestational age, and current diet. However, there is no adjustment for the amount of exercise the child did at the time of the study.

A more recent study examined the relationship of breastfeeding and adiposity on a population based birth cohort study of 18 year old men. This found that while there was a relationship between a decrease in obesity and breastfeeding for three to five months, it was difficult to interpret, as there had been no a priori hypothesis regarding a protective effect of intermediate duration of breastfeeding (Victora, Barros et al. 2003). Their conclusion was that in this population, breastfeeding has no marked protective effect against adiposity.

Because of the mixed results regarding breastfeeding on BMI, Owen et al (2004) undertook a meta-analysis of published and unpublished data investigating the association between infant feeding and a measure of obesity or adiposity in later life. Eligible studies were those that were identified in a systematic review of MEDLINE (1966 through to September 2003) and EMBASE (1980 to September 2003) databases. They examined the influence of infant feeding on obesity throughout the

life span from six weeks after birth. In total, 60 studies were considered for inclusion (385,765 subjects). They also examined a further ten unpublished studies (a total of 70 studies with 414,750 subjects). Their overall conclusion was that the mean BMI is lower among breastfed subjects. However the difference is very small and may well be accounted for by publication bias and confounding factors. Promotion of breastfeeding is unlikely to reduce BMI in later life.

Sudden Infant Death Syndrome (SIDS)

Sullivan and Barlow (Sullivan and Barlow 2001) undertook a review of the risk factors of SIDS and concluded that whilst many studies found a positive correlation between bottle feeding and SIDS, most studies did not account for confounding factors such as social factors, prematurity and birth weight of the infant, maternal smoking and prone sleeping. However, they concluded that in the studies that did account for these factors, most demonstrated an association between breastfeeding and reduction in the risk of SIDS. These studies also showed a dose response relationship, that is reduced risk of SIDS with increasing frequency and duration of breastfeeding. One of the most significant of these studies showed an association between breastfeeding and the reduction of SIDS and was known as the New Zealand Cot Death Study (Mitchell, Scragg et al. 1991). This study controlled for 20 variables that were known or thought to influence the risk of SIDS. However, in 1996 Mitchell et al undertook another study that demonstrated that breastfeeding was not associated with a statistically significant reduction in the risk of SIDS (Mitchell, Tuohy et al. 1997). There is still debate whether there might be other confounding factors that have not as yet been taken into consideration that impact on results showing an association of a reduction in SIDS with breastfeeding, for example geographical and racial factors, where the link between the confounding factor and the two variables is not understood.

One of the mechanisms that may help prevent SIDS for the breastfed infant is that breastfed infants are at decreased risk of gastro-intestinal infections. Some SIDS infants have had symptoms of gastro-intestinal infections prior to death. One of these that has been implicated in the cause of Sudden Infant Death Syndrome is Clostridium perfringens. Breastmilk enhanced bacterial binding of this organism thus rendering it inactive (Gordon, Saadi et al. 1999).

Diabetes Type I

One study examined the association between breastfeeding and development of islet auto-antibodies (a precursor to the development of Type I diabetes). This study found no association between breastfeeding and the development of disease. However, a more recent study suggests that exclusive breastfeeding for longer than two months is a protective factor for developing Type I diabetes prior to 9 years of age (odds ratio 0.58, 95% confidence interval 0.34 – 0.99) (Sadauskaite-Kuehne, Ludvigsson et al. 2004).

Hypertension

Owen et al undertook a meta-analysis (29 studies) to assess the impact of early breastfeeding on hypertension in later life. They found that the smaller the number of participants in the study the greater the association of a protective factor. However with larger studies with participants of more than 1000 (four studies) the results suggested that the association was minimal and had no public health or clinical significance (Owen, Whincup et al. 2003).

Additional Benefits of Breastfeeding for the Infant

Intelligence Quotient

Anderson et al undertook a meta-analysis of 20 studies to assess the association between breastfeeding and cognitive development (Anderson, Johnstone et al. 1999). Overall, these studies suggest that breastfed children score more highly on cognitive development tests than formula fed children. However, some of the studies suggest that the differences may be due to confounding factors such as socioeconomic status or maternal education. Further examination of studies that adjusted for these co-variates (11 studies), showed there was a statistically significant difference between infants aged six months to 23 months with breast-fed infants registering a mean of 3.16 points higher than the formula fed ones. The difference was also greater the more the infant was breastfed. This level of difference is relatively small and it is still possible that it is accounted for by another as yet unrecognised confounding factor.

Bonding and Attachment

Breastfeeding may also enhance the bonding process between the mother and the baby. It is believed that the nursing infant receives a sense of security from the presence and warmth of the mother. This is thought to be greater in the presence of skin-to-skin contact. In contrast, a bottle fed infant may be prop fed with little human contact (Williams 1995). Breastfeeding may also impact on long-term attachment between children and their parents. Fergusson and Woodward (1999) examined the relationship between the duration of breastfeeding and psychosocial outcomes measured between the ages of 15 and 18 years in a New Zealand birth cohort (Fergusson and Woodward 1999) following health outcomes of 999 children. During the period of birth to one year, details were obtained on maternal breastfeeding and then at the ages of 15 and 18 years the participants were assessed using a variety of psychosocial measures. These included measures of the quality of parent-child relationships, juvenile delinquency, substance abuse and mental health. Children who were breastfed for longer were more likely to report higher levels of parental attachment and they tended to perceive their mothers as being more caring and less over-protective towards them compared to their bottle fed counterparts. The researchers controlled for confounding factors of maternal age, maternal education, living with a partner, maternal smoking history and socio-economic backgrounds and concluded that breastfeeding may lead to closer parent-child relationships. However, there may be other unaccounted and currently unknown factors in this study, which give this result.

Benefits/ Effects to the Mother

Breastfeeding not only contributes to infant health and well-being but it is also important for maternal health. The following details the impact of breastfeeding on varying health issues.

Decrease of haemorrhage post-partum

It is known that the oxytocin released during breastfeeding helps the uterus to return to its pre-pregnant size and helps to reduce postpartum bleeding (Negishi et al, 1999).

As it accelerates this natural process of uterine involution, a woman who is breastfeeding is less likely to suffer from a post partum haemorrhage.

Post Partum Weight Loss and Loss of Maternal Stores

It has previously been thought that breastfeeding aids the loss of maternal fat stores accumulated during pregnancy but this is now thought not to be the case (Ainbinder, Andrew et al. 2003). However, studies that have examined the place of exclusive breastfeeding for longer than six months found that this resulted in a more rapid post-partum weight loss. It appears therefore that it is only extended breastfeeding that impacts on maternal weight loss (Kramer and Kakuma 2002).

Fertility Implications

Breastfeeding plays a role in regulating a mother's fertility by suppressing ovulation, although how long this lasts varies widely among individuals. It appears that this occurs through the suckling of the infant. This suckling stimulates the production of prolactin by the pituitary gland and this inhibits the hormones, which stimulate the maturing and release of the ova. However, in order to completely suppress ovulation, exclusive or full breastfeeding is required. If the baby is exclusively breastfed day and night at frequent intervals (not greater than six hours) and the mother is ammenorrhoeic, there is a high level of contraceptive safety (Gross and Burger 2002; McNeilly 2001).

Reduction of Cancer

It has been thought for some time that breastfeeding may decrease the risk of breast and ovarian cancer for the mother (Rosenblatt and Thomas 1993, Newcomb, Storer et al. 1994).

Breast Cancer

Bernier et al (Bernier, Plu-Bureau et al. 2000) undertook a meta-analysis to evaluate the relationship between breastfeeding and breast cancers using case-control studies. This indicated that breastfeeding was a protective factor for breast cancer but was of small magnitude compared with other known risk factors for breast cancer. The Canadian guidelines for physicians when counselling their patients about their risk of

breast cancer also recommend breastfeeding (Helewa, Levesque et al. 2002). Other studies also seem to support this conclusion. (Enger, Ross et al. 1998).

Ovarian Cancer

There have been many studies that have discussed the relationship between breastfeeding and ovarian cancer. Yen et al (Yen, Yen et al. 2003) undertook a case control study in Taiwan to identify risk factors. They found that there was a trend towards protection against ovarian cancer with higher parity and breastfeeding. However, Hartge et al (Hartge, Schiffman et al. 1989) found that the while the risk of ovarian cancer was decreased by breastfeeding, it was not linked to the number of months that breastfeeding was continued.

Benefits to Society

Economic benefits

There have been some authors that have analysed the economic benefits of breastfeeding. Riordan (1998) states that as breastfeeding reduces the risk of diarrhoeal infant disease the potential savings in health care costs in the US for would be $31 million (US). There were 2,856 children aged zero to five years of age admitted for intestinal infectious diseases in New Zealand in 1999/2000 (NZHIS 2003). On average, these children spent 2.8 days in hospital. As this figure was for all children between birth and five years of age, the majority of them would not have the risk reduced by being breastfed. However, for argument's sake, if one percent were not hospitalised with a gastroenteritis infection because they were breastfed, this would prevent 28 of these children being admitted to hospital. The cost of a stay for a night in hospital equals approximately $700 so 28 children that avoid admittance to hospital at 2.8 nights a stay would equal almost $55,000. Bevin examined the cost of not breastfeeding for a number of health conditions and she makes the point that not breastfeeding significantly increases costs for both the family and the health care system (Bevin 1998).

Breastfeeding not only results in reduced health care costs but it also provides economic benefits to the family as breastfeeding is significantly cheaper than bottle feeding (AAP 1997). WABA (1998) states that in the USA it is estimated that six months of exclusive breastfeeding would save the family $450 - $800 in health and welfare costs. They state that the families save by not having to purchase infant formula and complementary baby foods. This allows the family to have more disposable income. According to WABA (1998), in New Zealand, five percent of wages per month would be needed to buy formula to feed a baby (WABA 1998). Riordan states that for the average family the cost of purchasing formula is twice the cost of purchasing additional food for the breastfeeding mother (Riordan 1997).

Environmental Benefits

There are also environmental benefits to breastfeeding. The World Alliance for Breastfeeding Action (WABA 1997) states that breastfeeding is an efficient use of resources as it is completely natural. It limits the sources of waste and pollution as it does not require electricity power to process it, requires no packaging and therefore requires no waste management system to dispose of the packaging. In contrast, artificial feeding may involve over grazing of the land by cattle; use of chemical fertilisers to grow grass, or soy; and use of precious environmental resources for formula production (this includes packaging and transportation of the product; use of water and fuel for mixing and heating the product and for sterilising bottles and teats; and the waste disposal of the cans, bottles and accessories).

Conclusion

The literature shows that breastfeeding provides the infant with the ideal nutrition elements that the growing and developing baby requires, it also has some health benefits. The main health benefit is that breastfeeding decreases the risk of the infant contracting some infectious diseases such as diarrhoeal disease, respiratory infections and otitis media. It may also protect against atopy and may decrease the prevalence of childhood obesity. Additional benefits to the infants are that it may increase their intelligence and may also enhance the bonding between the mother and infant.

Breastfeeding is also important for maternal health. Immediately after birth it assists with the involution of the uterus therefore decreasing the risk of a post-partum haemorrhage. It also provides a contraceptive effect. However, the major benefit for mothers is that it decreases the risk of breast and ovarian cancer.

Breastfeeding is also good for society. As it decreases the risk of infant infectious diseases, it results in less hospitalisation and therefore the government spends less money on the health budget. It also means that families have more disposable income as they are spending less to feed their infant. Another benefit for society is that breastfeeding is an efficient use of resources with no power required to process it and no packaging that requires disposal.

Therefore, given all the short and long term benefits, breastfeeding appears to be the best way of feeding an infant.

CHAPTER 3 – CONTEXTUAL FACTORS THAT INFLUENCE BREASTFEEDING

Introduction

This chapter will discuss factors related to the prevalence of breastfeeding in New Zealand and overseas. Many factors influence trends – some factors are relevant for initiation of breastfeeding while other factors influence its continuation. These factors will be examined in detail. Some factors are particularly relevant to the New Zealand setting. These include the demographic changes in the population (such as ethnic makeup and the age of women having babies), and health system changes and the result of these on maternity services.

It is important to examine breastfeeding rates for the first 4-6 months post partum and the factors that influence them, as exclusive breastfeeding is recognised as important until this age. The World Health Organisation state in their Innocenti Declaration (WHO 1990) that member states should ensure that

> all women should be enabled to practise exclusive breastfeeding and all infants should be fed exclusively on breast milk from birth to 4-6 months of age. Thereafter, children should continue to be breastfed while receiving appropriate and adequate complementary foods, for up to two years of age or beyond. This child feeding ideal is to be achieved by creating an appropriate environment of awareness and support so that women can breastfeed in this manner.

Later World Health Organisation correspondence also emphases this, as member states are urged to

> strengthen activities and develop new approaches to protect, promote and support exclusive breastfeeding for six months" (WHO 2001).

Initiation of Breastfeeding

Many articles discuss factors that are relevant for breastfeeding initiation. The following section will discuss these factors.

Personal factors

Planning to breastfeed

Many articles indicate that a decision to breastfeed prior to the birth of the baby plays a big part in initiating breastfeeding (Earle 2002) (Donath and Amir 2003). Donath et al demonstrated that maternal intention to breastfeed was a stronger indicator than any demographic factors. They undertook a longitudinal cohort study that asked the women their feeding intention at 32 weeks of pregnancy and then compared breastfeeding initiation and duration. This was a large study with data available on 10,548 women. Of the women intending to bottle feed from birth, only 3.4 percent initiated breastfeeding compared with 96.6 percent of women planning to breastfeed for at least four months.

This finding has implications for the ongoing promotion of breastfeeding through the media. Earle (Earle 2002) conducted qualitative interviews with 19 women at six weeks into their pregnancy and then another interview towards the end of their pregnancy as well as three months after childbirth. Whilst this was a qualitative study and therefore generalisations cannot be made for the whole population, she found that the women had all decided on their feeding method prior to the first interview. She notes that the implications of this are that breastfeeding promotion needs to be targeted at all women of childbearing age rather than only those who are already pregnant.

The media may impact on breastfeeding rates as well. Henderson et al examined visual and verbal references in the media to breast or bottle feeding in newspapers and television programmes in Britain and found that bottle feeding was associated with "ordinary" families while breastfeeding was associated with middle class and celebrity families (Henderson, Kitzinger et al. 2000).

Unintended Pregnancy and Breastfeeding

Taylor and Cabral undertook a study that examined the association between unintended pregnancy and the initiation of and duration of breastfeeding. Their study

analysed data obtained through the USA National Survey of Family Growth 1995 and they studied 6,733 first singleton live births to US women aged 15 to 44 years old. They categorised pregnancies into intended or unintended. Unintended pregnancies were further categorised into mistimed or unwanted. They found, in the United States, women with unwanted pregnancies were less likely to initiate breastfeeding than women with intended pregnancies (odds ratio [OR] = 1.76; 95% CI, 1.26, 2.44) (Taylor and Cabral 2002).

Ethnicity, Socioeconomic Status and Maternal age and Education

Many studies have examined the relationship between these variables and the initiation of breastfeeding (Dubois and Girard, 2003; Dennis, 2002; Birenbaum, Fuchs et al., 1989). These studies show that women least likely to breastfeed are young, have a low income, come from an ethnic minority and have a poorer education than their breastfeeding counterparts. However, Scott and Binns found that when they performed a literature review, some associations between breastfeeding and factors commonly investigated were not consistent when the studies employed multivariate analysis to control for potential confounders and covariates (Scott and Binn 1999). There remained a strong association between breastfeeding and maternal age and level of education but there was a less consistent association between breastfeeding and marital and socioeconomic status. New Zealand studies have demonstrated mixed results with socio-economic status and breastfeeding. One such study demonstrated that women of lower socio-economic status were less likely to breastfeed (Msuya, Harding et al. 1990). However another showed that socio-economic status did not make a difference to breastfeeding status at discharge from hospital (Gunn 1984).

Breastfeeding Initiation and Caesarean Sections

There is debate around whether caesarean section makes a difference to the initiation of breastfeeding. One of the largest studies examined data from the 1987 Mexican Demographic and Health Survey (subsample size of 2,517 consisting of women whose delivery of their last child under five years of age was attended by a physician). This found that caesarean section was a risk factor for not initiating breastfeeding (odds ratio = 0.65, 95% CI = 0.5, 0.82) and for breastfeeding for less than one month (OR = 0.58, 95% CI = 0.37, 0.91) but was not related to breastfeeding duration for a

month or more (OR = 0.97, 95% CI= 0.86, 1.11). It is thought that caesarean section affects breastfeeding by jeopardising the establishment of lactation during the first two to four weeks post partum (Perez-Escamilla, Maulen-Radovan et al., 1996; Rowe-Murray and Fisher, 2003). Studies have found that if hospitals were able to provide additional breastfeeding support during the early post partum period, breastfeeding initiation was as good as for women who had a normal vaginal delivery.

Maternal Smoking

Horta et al performed a meta-analysis to review the effect of maternal smoking on early weaning. Most of the studies examined demonstrated a statistically significant risk that maternal smoking increases the risk of weaning infants before they reached three months of age. The meta-analysis showed that in smoking versus nonsmoking mothers, the adjusted odds ratio for weaning before three months was 1.50 (95% CI = 1.34, 1.68) in studies that had lost-to-follow-up rates below 15 percent and included adequate adjustment for confounding. (Horta, Kramer et al. 2001).

Maternal Weight and Breastfeeding

Studies have been done to establish the relationship between breastfeeding and maternal weight. Ruowei yet al examined 124,151 mother infant pairs from the Pediatric Nutrition Surveillance and the Pregnancy Nutrition Surveillance System. They found that maternal Body Mass Index before pregnancy and gestational weight gain were each independently associated with breastfeeding initiation and duration. Women who were obese were less likely to initiate breastfeeding than women with a normal BMI. Women who were obese breastfed for a shorter time than their counterparts (two weeks less on average) and women who failed to reach or exceeded their recommended gestational weight gain also breastfed for a shorter time (one week less overall) (Ruowei, Jewell et al. 2003).

Societial Factors

Support for Breastfeeding Mothers

Sikorski et al performed a meta-analysis to assess the association between support for breastfeeding mothers and the initiation and duration of breastfeeding. This meta-analysis identified twenty eligible randomised or quasi-randomised controlled trials from 10 countries. They demonstrated that professional support made a statistically significant difference to the effect on the duration of breastfeeding and also made a difference to the percentage of women exclusively breastfeeding. This may be because professional support assists the woman to solve breastfeeding problems such as latching the baby on correctly, nipple trauma and breast infections. Lay support was also effective in reducing the cessation of exclusive breastfeeding but this did not reach statistical significance (Sikorski, Renfrew et al. 2002). They comment that further trials are required to assess the effectiveness of lay and professional support on different settings, particularly in communities where there are low rates of breastfeeding.

Family Support was also important for the breastfeeding mother. Arora et al showed that a supportive father made a difference to the breastfeeding initiation with a mother's perception to how the father feels about it influencing her decision. If the father supported her decision she was more likely to breastfeed (Arora, McJunkin et al. 2000). However Earle comments that fathers who want to be involved in the care of their infant may be detrimental to breastfeeding where they want to share in the feeding of the infant (Earle 2002). This highlights the need to educate fathers about the benefits of breastfeeding for the infant and mother.

Meyerink and Marquis found that initiation of breastfeeding was positively associated with the mother having herself been breastfed and if she had previously breastfed an infant. Breastfeeding at one month was more likely if the mother had a close relative who breastfed (Meyerink and Marquis 2002). This study, however, did not elaborate on why a mother who had herself been breastfed or had a close relative who breastfed, was more likely to breastfeed her infant. It is possible that the grandmother or close relative was able to give additional support because of her experience of breastfeeding.

Another study comments that while support from a social and professional network increases breastfeeding, negative social support may decrease it (Raj and Plichta 1998). They found that the elements of social support that were important were emotional, tangible and educational. Therefore when these were either lacking or there was a negative attitude towards breastfeeding by the woman's support network, there was a likelihood that the woman would be less willing to initiate breastfeeding.

Breastfeeding Promotion Initiatives - Baby Friendly Hospital Initiative (BFHI)

Several studies have commented on the effectiveness of the Baby Friendly Hospital Initiative (BFHI) programme to increase the initiation of breastfeeding (Merewood, Philipp et al., 2003; Rowe-Murray and Fisher, 2002). It appears that fostering a breastfeeding culture and not offering the option of formula feeding in maternity units increases the breastfeeding rates.

New Zealand hospitals are currently undertaking audits to achieve BFHI accreditation. Whilst many of them have been utilising this programme for some time, the accreditation process has only just begun. It will be interesting to assess the breastfeeding rates once accreditation is in place throughout the country. Details of the Baby Friendly Hospital Initiative can be found in Chapter 4.

Continuation of Breastfeeding

Not only are there factors that influence initiation of breastfeeding but there are also reasons that contribute to its continuation. Some of these factors are the same as those for initiation but there are also some ones. This section will discuss all the factors.

Personal Factors

Prenatal Breastfeeding Intention

Prenatal intention to breastfeed has an effect not only on initiation of breastfeeding but also on duration. Donath and Amir undertook a study to determine this and found that when the baby was six months of age, if the mother only intended to breastfeed

for one month, the mean duration of breastfeeding was 2.5 months. However, if the mother was intending to breastfeed for at least five months, the mean duration was 4.4 months (Donath and Amir 2003).

Postnatal Depression and Breastfeeding

A study was undertaken to assess whether postnatal depression had any impact on breastfeeding duration. In this study, after adjustment for confounding factors it was found that there was a statistically significant difference in breastfeeding with women who have this condition more likely to cease earlier than their counterparts. Median duration of breastfeeding was 26 weeks for women with early-onset postnatal depression, 28 weeks for women with late-onset postnatal depression, and 39 weeks for women without depression (Henderson, Evans et al. 2003).

Socio-Economic Status and Breastfeeding

Socio-economic status has an impact not only on the initiation of breastfeeding but also the continuation of it. There have been two studies that have shown this within New Zealand. It is thought that the socio-economic status of the population also influences breastfeeding rates. Flight and Adam (1986) conducted a study examining the relationship between breastfeeding and socio-economic status. They used the Elley Irvine Social Class scale, which divided the population into six classes – Class One having the highest socio-economic status and Class Six having the lowest. They found that there was a steady decline in the percentage of women breastfeeding their infants at six months of age – Class One had a rate of 70.6 percent, which lowered to 40.0 percent for Class Six (Flight and Adam 1986). This same finding came out of a second New Zealand study undertaken in 1990 (Msuya, Harding et al. 1990).

Overseas studies from developed countries also demonstrated that breastfeeding was less likely to occur with women with lower socio-economic status. Milligan et al (2000) identified that in the United States the breastfeeding rate for the total population at six months of age was 26 percent, however only 16.5 percent of mothers with low incomes breastfed at this same point of time (Milligan, Pugh et al. 2000). Birenbaum at al (1989) identified that in Israel, women were more likely to breastfeed if they had a higher educational level, and were in the academic or para-academic professions (Birenbaum, Vila et al. 1993).

Maternal Smoking and Duration of Breastfeeding

Amir and Donath conducted a meta-analysis to assess the epidemiological evidence that maternal smoking has a negative physiological effect on breastfeeding. These studies showed that while women who were smoking were less likely to initiate breastfeeding and breastfed for a shorter period of time than their non-smoking counterparts, this was more likely to be due to confounding factors than smoking physiologically causing a decrease in breastfeeding (Amir and Donath 2003).

Societal Factors

Ongoing support

It appears that if breastfeeding mothers have ongoing support they are more likely to breastfeed. Sikorski et al demonstrated this through a meta-analysis. Any extra support – lay or professional, was beneficial for the duration of breastfeeding. Professional support was statistically significant for the duration of any breastfeeding while lay support appeared beneficial for the promotion of exclusive breastfeeding. The conclusion that the authors made was that further trials are required to assess the effectiveness of lay and professional support in different settings, in particular, those with low rates of breastfeeding initiation as well as to assess the most appropriate training for those who support breastfeeding mothers (Sikorski and Renfrew 2000).

Emotional support

Cernadas et al examined factors that were important for the duration of breastfeeding. One of the factors that they found was important was good family support. This factor remained significant after controlling for confounding factors (Cernadas, Noceda et al. 2003).

Societal Support

In order for breastfeeding to endure beyond initiation it is important that there are is societal support for it. These societal factors include support through the workforce, paid parental leave and childcare centres being supportive.

Many studies have examined the relationship between breastfeeding and returning to employment for the mother. Taveras found that women who returned to work or school prior to the infant reaching three months of age were more likely to discontinue breastfeeding than their counterparts (Taveras, Capra et al. 2003). Kearney et al also examined the relationship between breastfeeding and re-entering the workforce. They found that the women who planned to return to work predicted that they would give up breastfeeding earlier than their stay at home counterparts. However, the only significant effect that they found was that women who returned prior to two months were more likely to have negative breastfeeding outcomes (Kearney and Cronenwett 1991). Galtry states that the timing of the mother's resumption of employment is often the key factor for the duration of exclusive breastfeeding (Galtry 2003). Therefore it is important to ensure that parental leave provisions take into account the importance of breastfeeding. New Zealand has now introduced paid parental leave provisions. The current provisions allow for women to receive paid parental leave for 14 weeks.

Other studies examined the employer's attitude to supporting breastfeeding within the workplace. Arthur et al studied a group of physician women in Mississippi to assess their breastfeeding practices. Many of them returned to work and stated that a lack of time and space to use a breast pump was a difficulty that they encountered on return to the workforce. This same study found that if the women were able to work part-time after having the child, the breastfeeding was likely to continue for a longer period of time (Arthur, Saenz et al. 2003). Libbus examined the attitudes of employers to breastfeeding employees. Whilst many of them stated that they would be willing to facilitate breastfeeding or expression of breastmilk in the workplace, they also stated that they saw little benefit to their business through supporting breastfeeding (Libbus and Bullock 2002).

Breastfeeding Rates in NZ and Other Countries

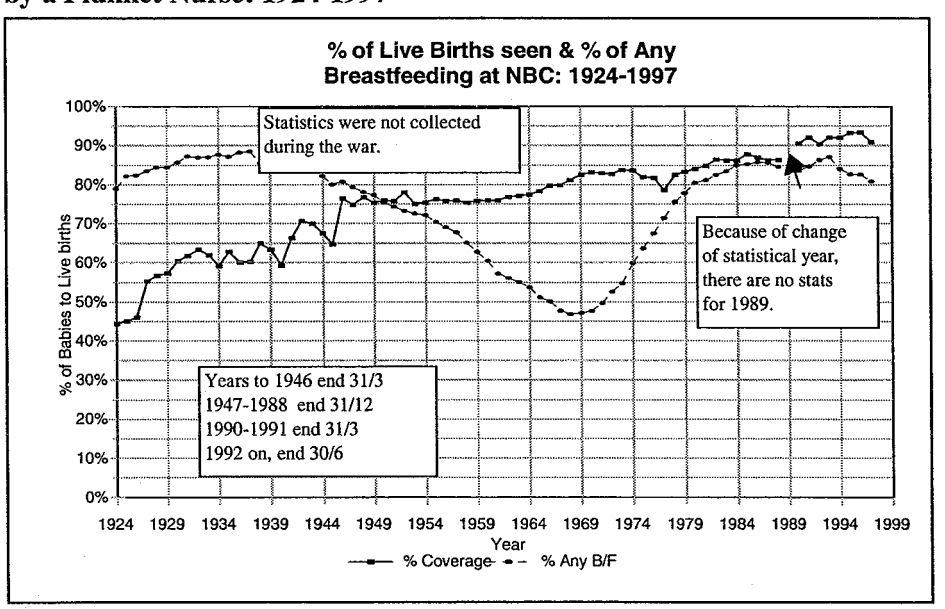
New Zealand

The Royal New Zealand Plunket Society has gathered the most detailed records of breastfeeding rates for New Zealand over the past 80 years. Whilst this has provided estimates of breastfeeding rates for New Zealand, they may be biased as not all babies are under the Plunket Society's care. However, they do give an indication of rates and trends over a long period.

Plunket and Breastfeeding Data

The Royal New Zealand Plunket Society (Plunket) has gathered breastfeeding data since the 1920s, although the accuracy of the data has been variable. In the 1920s only about 40 percent of babies born in New Zealand used the Plunket service compared to over 75 percent from the mid 1940s to 1970s and 90 percent in the 1990s. Therefore Plunket records provide some data on breastfeeding trends in New Zealand (Baldwin, Gafford et al. 1998). The data collected since the 1920s examined "any" breastfeeding when first seen by the Plunket nurse. Figure 1 shows an historical view of this from 1924 to 1997.

Figure 1: Percent Of Live Births Seen and Percent Any Breastfeeding when First Seen by a Plunket Nurse: 1924-1997



Source: Royal New Zealand Plunket Society 1998

The data does not include information on breastfeeding rates among Maori prior to 1986. At this time Maori families tended to receive their child health checks (historically commonly called Plunket visits) from the Public Health Nurses. In 1986 the Public Health Act transferred the care of Maori babies from public health nurses to Plunket. This was particularly relevant for some geographic areas of New Zealand such as the East Coast and Poverty Bay where there is (and was) a high Maori population. Breastfeeding data for these regions prior to 1986 does not exist.

As can be seen by the graph above, there was a large dip in breastfeeding rates from the 1950s to the 1980s. One of the explanations for this was the prevalent belief that bottle-feeding was better. This idea may have been propagated by formula feeding manufacturers as a marketing strategy. According to Dykes (2002), breastfeeding was depicted as being outmoded and outdated. Also there was the thought that the bigger a baby was, the healthier they were.

The regime of having a baby in a three to four hourly feeding routine may have also helped to establish this practice. The insistence of having feeding regimes has been seen as one of the aspects of the "medicalisation" of breastfeeding (Dyke 2002). Mary Read stated in her book "The Mothercraft Manual" (Read 1929) that:

> regularity is of the greatest importance in feeding. Clock schedule should be observed from the first day and maintained thereafter.

The belief about the importance in scheduled feeding was also emphasised in the 1970s when Dr Benjamin Spock's book "Baby and Child Care" was used by many parents as a guide to bringing up children (Spock, 1975, p 65 - 70). However, babies absorb breastmilk faster than formula, which means they become hungrier sooner and require feeding before the end of the three hour interval. Breastfeeding also requires adequate stimulation of the breasts to produce enough milk for the baby so if the baby was only being fed three to four hourly, insufficient milk may have been made to satisfy the baby's hunger and growth needs. Thus breastfeeding may have been very difficult to establish with a three to four hourly feeding routine.

Other studies in New Zealand also demonstrate similar patterns with the breastfeeding rates suffering a dip in the 1950s to 1970s. Ford et al (Ford, Schluter et al. 1996) examined breastfeeding rates at discharge from Canterbury maternity units and found that in 1968 only half the infants were being breastfed at discharge from the maternity units. This rate steadily increased and from the 1990s 90 percent of infants were being breastfed at discharge. Msuya et al (Msuya, Harding et al. 1990) examined breastfeeding practices in Dunedin from 1974-83 and also found that there was a steady increase in the number of women who breastfed their infants with approximately 57 percent breastfeeding in 1974, and 80 percent in 1980. However, there are several weaknesses with this particular study. It utilises Plunket Child Health Records and whilst 70 percent of the records were available for the period of 1977-1981, only 10 percent were available for 1974. These records could have been biased, making it difficult to generalise the rate of breastfeeding from these to the general infant population of Dunedin. Gunn also examined breastfeeding practice on discharge at a West Auckland hospital and found that at that time, the percentage of women breastfeeding was 82 percent. This study did not follow the prevalence of breastfeeding at hospital discharge over time (Gunn 1984).

Breastfeeding Definitions

Because Plunket data were based on the rate of *any* breastfeeding at **first contact**, there are inconsistencies. In the 1990s, changes in the health care system meant that the length of postnatal midwifery care increased delaying the first Plunket contact with the mother and infant. In 1993, over 92 percent of babies who were seen by a Plunket nurse, were seen by three weeks of age (Essex, Smale et al. 1995). However, by 1997 nationwide figures indicate that the average first contact with the baby (family) by the Plunket nurse was much later with 65 percent of infants seen by four weeks, 82 percent by six weeks and 96 percent by ten weeks (Baldwin, Gafford et al. 1998).

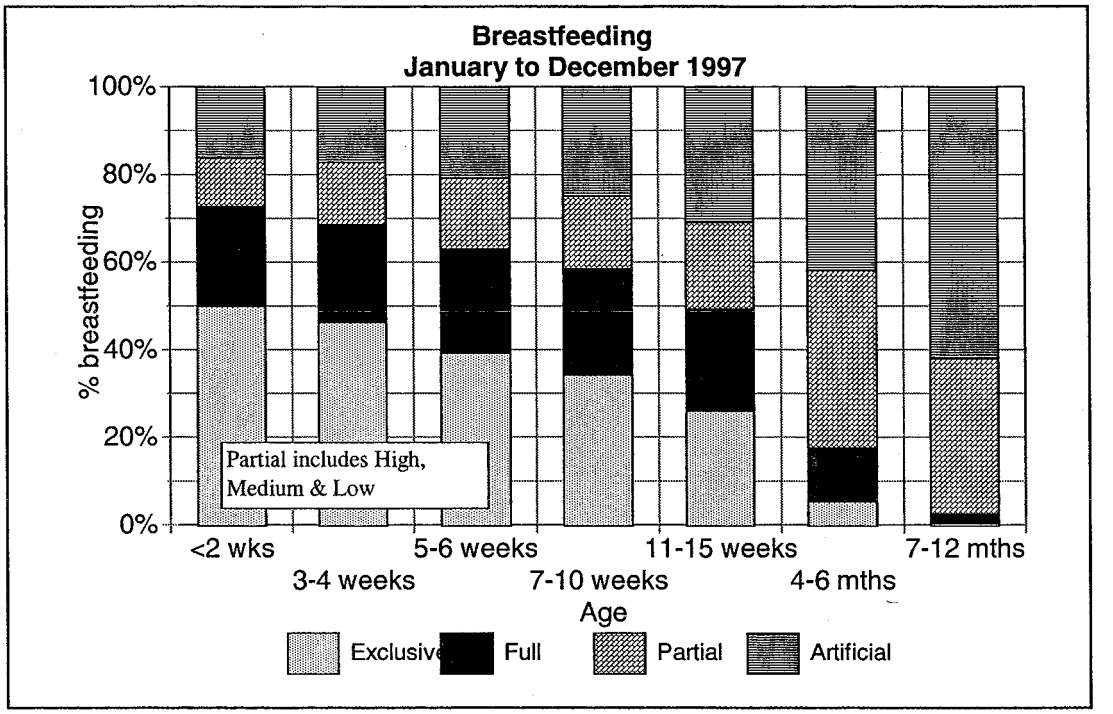
This has been further complicated by a change in breastfeeding definitions. In the 1990s, the Plunket Society realised that the term "breastfeeding" was inadequate to describe breastfeeding behaviour. Prior to 1990, the term "breastfeeding" was used for all breastfeeding behaviour. No matter whether a mother was totally breastfeeding or only giving one breastfeed to her infant a day, it was still classified under the

general term of "breastfeeding". In 1992, using the model established by Labbok and Krasovec (Labbok and Krasovec 1990) the Plunket Society established definitions for a number of breastfeeding practices. Originally these included the categories "full", "high" "medium" and 'low" but in 1996 a further category of "exclusive" was included. The inclusion of this category was significant as it described whether the infant had had only breast milk historically as well as at the time the data was collected. This allowed for analysis of health data in the future and the link between exclusively breastfed and the onset of some diseases, for example atopy. Current definitions can be found in Appendix One.

In 1992, 93.8 percent of New Zealand women initiated breastfeeding (Thurtle 1997). This included all categories of breastfeeding as mentioned above. The 2002 report on Maternal and Newborn information does give breastfeeding rates at discharge from the Lead Maternity Carer. However, this was not recorded for 18,332 out of a total number of 58,199 infants (that is the information was not gathered for 31.5 percent of the total population) as the field was not mandatory. From these data, the rates were 19.9 percent were exclusively breastfeeding, 24 percent were fully breastfeeding and 7.3 percent were partially breastfeeding. As approximately one third of these data were not collected it is impossible to make any generalisations from these figures (Ministry of Health 2002, p62)

Figure 2 shows the New Zealand rates of breastfeeding for different age groups in 1997. This shows the falling rates with increases in the age of the baby.

Figure 2: Breastfeeding Rates by Age of Infant



Other Countries

The World Health Organisation has the most detailed information on breastfeeding rates around the world. According to the World Health Organisation figures, it is estimated that 35 percent of infants, world-wide, are exclusively breastfed for between zero and four months. This compares with New Zealand's rate of 30 percent for exclusive breastfeeding infants at three months of age. Comparisons are shown in Table 1. This table also indicates how difficult it is to compare the prevalence of breastfeeding practices in different countries.

Table 1: Comparison of Breastfeeding Rates in Other Countries

Country	Breastfeeding Rate	Type of Breastfeeding	Age of Infant
Total World Figures (World Health Organisation 2001)	35%	Exclusive	0-4 months
Sweden (World Health Organisation 2001)	98%	Unknown	? – Presume at birth
England and Wales (World Health Organisation 2001)	64%	Unknown	At birth
England and Wales (World Health Organisation 2001)	21%	Unknown	At 6 months
USA (Hill 2000, Milligan et al 2000)	64% 26%	Unknown Unknown	At birth 6 months
Scotland (Ferguson et al 1994)	35.6%	Unknown	At 7 days
Israel (Birenbaum et al 1989)	72%	Unknown	At discharge from hospital
New Zealand (RNZ Plunket Society 2001)	64% 51%	Exclusive/Full	6 weeks 3 months

The European countries on the whole tend to have a low "ever breastfed" rate, with the exception being Sweden. Its rate for "ever breastfed" is 98 percent. What is not clear from this information is the amount of breastfeeding the infant has received – it is assumed that this includes if they were given *any* breastmilk. It is possible that the infants' diets may have included other forms of nutrition such as formula.

The UK also demonstrates a low breastfeeding rate. Data from 1990 show 64 percent of women initiating breastfeeding in England and Wales, whilst Scotland had a breastfeeding rate of only 36 percent at seven days. At six months this prevalence had dropped to 21 percent. Similar figures can be seen in the USA. According to Hill (2000) the rate of breastfeeding initiation (presumably "any breastfeeding") in the USA is 64 percent. This decreases to 26 percent at six months of age (Milligan et al 2000).

Socio-Political Factors that Influence Breastfeeding Trends Within New Zealand

Age of Having Children

In the past thirty years the age of having children has increased. According to census data the average age of giving birth (to first, second or subsequent children) is now 29.4 years compared with 27.9 years in 1992 and 25.5 years in the early 1970s (Statistics New Zealand 2002). This trend is of interest as many studies indicate that older women are more likely to breastfeed than their younger counterparts (Scott and Binn, 1990; Dubois and Girard, 2003; Dennis, 2002; Birenbaum, Fuchs et al, 1989). However, within many of these studies there are confounding factors of maternal education levels and income levels as well.

Population Changes

Information on population changes is important as studies show that women from ethnic minority groups are less likely to initiate or continue breastfeeding (Dubois and Girard, 2003; Dennis, 2002; Birenbaum, Fuchs et al, 1989).

Maori

At the time of the signing of the Treaty of Waitangi, the population of Maori was no more than 100,000. It reached its lowest level at the turn of the twentieth century with only 42,000. More and more New Zealanders now identify as Maori. In 1996 548,000 identified as Maori. In 1996 14.5 percent of the population identified as Maori compared to 15.1 percent in 2001. It is predicted that by 2051 almost one million people will identify as Maori or 21 percent of the population (Statistics New Zealand 2006).

Pacific People

It is also known that the population of Pacific Nations' people has increased within New Zealand. Pacific peoples are amongst the fastest growing ethnic groups in New Zealand. According to census figures, in 1991 Pacific children under the age of 14 years made up 38.7 percent of the under 14 year old population compared with 23.3 percent for the total population (Statistics New Zealand 2002). The fertility rate in 1994 was double that of the rate in the national population (Finau and Tukuitonga

1999). In 1996, six percent of the population identified as Pacific compared to 6.7 percent in 2001.

Asian

The percentage of people identifying as Asian is also increasing. In 1996, five percent of the population identified as Asian compared to 2001 when seven percent identified as Asian.

European/Other

The population changes of the ethnic groups mentioned above have also had an impact on the population identifying as European / other. In 1996, 74.6 percent of the population identified as other compared to 2001 when 71.2 percent identified as European / other.

These population changes over the 1996 – 2001 period are demonstrated in Table 2.

Table 2: Percentage of Population with Different Ethnicity in New Zealand Over Time

	1996	2001	Projected 2021
Maori	14.5	15.5	17
Pacific	6	6.7	9
Asian	5	7	13
Other	74.6	71.2	69

Source of data: Statistics New Zealand (2006)

It is possible that this change in the percentage of ethnicities may impact on the breastfeeding rate as studies indicate that people identifying with a ethnic minority group are more likely not to breastfeed.

Health System Changes and their Affect on Maternity Services

In New Zealand at the beginning of the 20th century, most births took place at home. In her thesis, Ryan states that this changed with child birth becoming more medicalised with the formation of the Obstetric Society in 1927 (Ryan 1998). It was

believed the incidence of puerperal sepsis needed to be reduced, therefore The Obstetric Society regarded childbirth as a medical condition requiring an attendant doctor. This transition of childbirth from home to hospital was hastened by the advent of free maternity care under the Labour government in 1935. Whilst hospital deliveries per se should not have affected the breastfeeding rate the care of the women in hospital may have had an impact. For example, the handbook of maternity nursing practices, which was used to ensure a "uniformly high standard of obstetric care throughout the country" based breastfeeding practices on artificial feeding routines:

> Following a normal delivery it is usual for the baby to go to both breasts for feeding about 4 hours after the birth. From then onwards he is fed at four hourly intervals, with a longer interval between feeds at night, i.e., from 10 pm to 6 am. The time the baby is at the breast should be regulated so that he has a few minutes at each breast. In the first few days of life, some infants cry because they are thirsty. Boiled water should therefore be given as required. (Dept of Health 1960, p42 as quoted by Ryan 1998)

This practice is now recognised to inhibit the initiation and duration of breastfeeding. The Baby Friendly Hospital Initiative recommends that the baby is placed on the breast within an hour of birth and the baby is allowed to suckle, as he/she demands.

Over the rest of the 20th century, births tended to occur in hospital. However, there was a greater recognition of factors that influenced the initiation and duration of breastfeeding and better practices have slowly been adopted by maternity hospitals. These have been more formalised in the past few years with the introduction of the Baby Friendly Hospital Initiative's ten steps to breastfeeding (see page 50).

Further maternity changes came into effect in the 1990s, a time of major health reforms, producing a highly competitive, market-orientated health system. This economic model approach was underpinned by the following theories:

- Neo-liberalism – a market driven approach to the provision of goods and services resulting in a laissez-faire attitude towards governing (Tenbensel and Gauld 2001). Under this approach the government provides the general direction with service providers developing details (Gauld, 1999)

- Rationalism – an orderly approach to policy that examines all possible options to achieve the desired outcome and attempts to pick the best solution (Tenbensel and Gauld 2001)
- Institutional economics – the application of economics to the study of social factors and public life. The major subsets include: public choice theory which assumes that everyone works to enhance their own interests, which in turn distorts the economy; and agency theory which presupposes that relationships identify humanity and therefore are subject to formal agreements. Such an agreement helps to prevent self-interested behaviour (Gauld 1999).
- Manageralism – the public sector operating in the same manner as the private sector, allowing for more 'management', 'entrepreneurialism' and freedom. Therefore individuals and organisations are encouraged to find their own answers (Gauld 1999).

The specific legislation that facilitated the competitive nature of maternity services was the introduction of the Health and Disability Services Act 1996: Section 51 (New Zealand Govt 1996). This legislation resulted in a reduced amount claimable for a full maternity case and placed providers in competition for the one set of fees with the introduction of the concept of 'lead maternity carer'. It also encouraged early discharge by paying more to providers for home-based care (Blanchette 2003). It is unclear what impact this may have had on breastfeeding. Longer stays in hospital may give the mother a chance to focus solely on the baby without distractions, but also may lead to inconsistent advice given by numerous staff members. This advice may not be put in the context that the mother requires for ongoing breastfeeding when in her home environment where other issues and distractions may occur.

One study has demonstrated an association with early hospital discharge and decreased breastfeeding rates (Heck, Schoendorf et al. 2003). However, this study was performed in the USA where discharge support is different from what is available in New Zealand. In New Zealand the midwives make follow-up home visits to continue to support breastfeeding. A study by Madden et al supports this, as they found that when there was early hospital discharge with good post discharge support the breastfeeding rates did not suffer (Madden, Soumerai et al. 2003).

Conclusion

This chapter has examined many factors that impact on breastfeeding rates and trends at both the personal and societal levels. It is very hard to examine any of these in isolation – any of them may be influenced by changes in other factors that are occurring at the same time.

It has also examined breastfeeding trends in a variety of countries. However, as breastfeeding is poorly defined in many of the countries it is hard to make comparisons.

CHAPTER 4 - POLICY ISSUES AND BREASTFEEDING

Introduction

This chapter will give an overview of breastfeeding policy. It will discuss the World Health Organisation's policy statements and then link these international policy drivers with breastfeeding policy development in New Zealand. It will also discuss other policies that impact on breastfeeding in the New Zealand context.

International Breastfeeding Policy

Breastfeeding has been an important emphasis of the World Health Organisation (WHO) and the United Nations Children's Fund (UNICEF). It is a key part of the overall nutrition and maternal and child health programmes of both organisations.

International Code of Marketing of Breast-milk Substitutes

The recognition of the importance of breastfeeding resulted in the WHO and UNICEF forming the "International Code of Marketing of Breast-milk Substitutes" in 1981. Its aim is to:

> Contribute to the provision of safe and adequate nutrition for infants, by the protection and promotion of breast-feeding, and by ensuring the proper use of breast-milk substitutes, when these are necessary, on the basis of adequate information and through appropriate marketing and distribution. (WHO 1981).

The Scope of the Code applies to:

> The marketing, and practices related thereto, of the following products: breast-milk substitutes, including infant formula; other milk products, foods and beverages, including bottlefed complementary foods, when marketed or otherwise represented to be suitable, with or without modification, for use as a partial or total replacement of breast milk; feeding bottles and teats. It also applies to their quality and availability, and to information concerning their use. (WHO 1981).

The following is a summary of the code:

1. Information and education – this should cover the benefits and superiority of breastfeeding, the importance of maternal nutrition for the preparation and maintenance of breastfeeding, the negative effect of introducing partial bottle feeding on breastfeeding, the difficulty of reversing the decision if the mother decides not to breastfeed and where needed, the proper use of infant formula. Any donations of material by the companies may not refer to a proprietary product that is within the scope of the code but can have the company's name and logo visible.
2. The general public and mothers – there is to be no form of promotion of formula to the general public, no distribution of samples or any other gifts to pregnant women or mothers of young infants and children and the marketing personnel are not to seek direct or indirect contact with pregnant women or mothers of young children.
3. Health care systems – they should encourage and promote breastfeeding, not be used to promote infant formula to the general public. They may accept donations or low-price sales of infant formula. However, these should only be used or distributed to infants who have to be fed breast milk substitutes and may not be used as a sales inducement.
4. Health workers – they should encourage and protect breastfeeding, may receive factual and scientific material from the manufacturers of infant formula, may not accept, samples, financial or material inducements offered by the manufacturers
5. Persons employed by manufacturers and distributors should not be given sales incentives or perform educational sessions with pregnant women or mothers of infants and young children.

Innocenti Declaration

The second major international document that was published was the Innocenti Declaration. This was produced and adopted by participants at the WHO/UNICEF policymakers' meeting on "Breastfeeding in the 1990s: A Global Initiative", held at Spedale degli, Innocenti, Florence, Italy, between 30 July - 1 August 1990. The Declaration reflects the content of the original background document for the meeting

and the views expressed in group and plenary sessions. This document recognises the benefits of breastfeeding and examines ways to enhance breastfeeding for women (WHO/UNICEF 1990). It looks at creating an appropriate environment to support breastfeeding through:

- The reinforcement of a breastfeeding culture through advocacy by leaders of society
- Increasing the women's confidence in their ability to breastfeed by the removal of constraints and influences that manipulate behaviours and perceptions of breastfeeding as well as the elimination of obstacles in the health system, workplace and community
- Ensuring that women are adequately nourished for the health of themselves and their family
- Development of national breastfeeding policies into overall health and development policies. Health care staff should be trained in the skills necessary to implement these policies

The declaration also formulated some operational targets that governments should have achieved by 1995. These were to have:

- Appointed a national breastfeeding co-ordinator and established a multisectoral national breastfeeding committee
- Ensured that every facility providing maternity services practices all of the "Ten Steps to Successful Breastfeeding" (see below under Baby Friendly Hospital Initiative)
- Taken action to give effect to the principles and aim of all articles of the "International Code of Marketing of Breast-milk Substitutes" and subsequent relevant World Health Assembly resolutions
- Enacted legislation protecting the breastfeeding rights of working women and establishing means for its enforcement (MOH 1997).

World Alliance for Breastfeeding Action

This was formed in 1991 as a result of a UNICEF-sponsored meeting for non-governmental organisations. This umbrella group launched the Baby Friendly

Hospital Initiative in 1992 (see below). Since then, it has established a "World Breastfeeding Week" from the 1-7 August each year where there has been a different theme around the support and promotion of breastfeeding. Themes for this week have included; "Breastfeeding, Nature's Way", "Breastfeeding, the Best Investment", "Breastfeeding, Healthy Mothers and Healthy Babies". Resources are always available for organisations to use to promote breastfeeding within their country.

Baby Friendly Hospital Initiative

The last major breastfeeding policy statement jointly endorsed by the World Health Organisation and the United Nations Children's Fund was the Baby Friendly Hospital Initiative launched in 1992 (WHO/UNICEF 1992). This aims to ensure that every baby is given the best start in life by ensuring that in health care environments, breastfeeding is the norm. The United Nation's Children's Fund and the World Health Organisation issued ten steps to breastfeeding, which are to be adhered to for a health centre to attain the accreditation of being "baby friendly". These ten steps are:

1. Have a written breastfeeding policy that is regularly communicated to all health care staff;
2. Train all staff in skills necessary to implement this policy;
3. Inform all pregnant women about the benefits and management of breastfeeding;
4. Help mothers initiate breastfeeding within half an hour of birth;
5. Show mothers how to breastfeed and how to sustain lactation, even if they should be separated from their infants;
6. Feed newborn infants nothing but breastmilk, unless medically indicated, and under no circumstances provide breastmilk substitutes, feeding bottles, or pacifiers free of charge or at low cost;
7. Practice rooming-in which allows mothers and infants to remain together 24 hours a day;
8. Encourage breastfeeding on demand;
9. Give no artificial pacifiers to breastfeeding infants;
10. Help start breastfeeding support groups and refer mothers to them. (CDC 2002)

All of these steps are shown to make a difference to breastfeeding. Offering other forms of nutrition to the infant works negatively on breastfeeding in two ways:

1. Alters the amount of milk that the mother produces. The more the breast is suckled the more milk is made, therefore satisfying the infant's hunger needs. A formula source decreases the amount that the infant will suckle and therefore decreases the amount of breast milk made.
2. Bottles require a different suckling technique to breastfeeding. If the infant is offered a bottle (or pacifier) the way the infant suckles changes. This may cause nipple confusion for the infant and impacts negatively on his/her ability to suckle at the breast.

The Baby Friendly Hospital Initiative also has the goal of the cessation of free and low cost infant formula in all maternal and infant health arenas.

Adoption of International Policies by New Zealand Government

1. International Code of Marketing of Breastmilk Substitutes

The New Zealand Minister of Health adopted the International Code of Marketing of Breast-Milk substitutes in its entirety in 1983:

> through consensus and discussion rather than through legislation. (MOH 1997).

However, it was not until 1997 that the Ministry of Health followed this up with a document highlighting New Zealand health workers' responsibilities under the code. This document was entitled "Infant Feeding – Guidelines for New Zealand Health Workers" (MOH 1997).

These guidelines state that health care systems and the workers within them have a responsibility to advise mothers and families about the superior value of breastfeeding. They should not be involved in the promotion of any products used for infant feeding and infant formula companies may not use health facilities to promote their products to the public. These companies are, however, allowed to provide factual

and scientific information about their products to health workers. Infant formula cannot be given to health organisations and institutions unless in the case of extreme poverty and with the following strict guidelines around it.

- Infants must be medically required to be fed, or are already being fed on breast-milk substitutes
- Supply must be continued for as long as the special circumstances continue
- The sale must not be used as a sales inducement (MOH 1997, p 8)

Health care facilities may also accept donations of equipment or material from the company but only the logo and name of the company may appear on the material – not the name of the infant formula.

These guidelines give the following responsibilities for health workers:

> • Health workers have a responsibility to protect and promote breastfeeding. For parents to make an informed choice about infant feeding, health workers need to be well informed.
> • Health workers may accept and distribute material such as pamphlets, posters, and booklets from infant formula companies providing the material is factual and educational. All material, whether written, audio or visual, must clarify the benefits and superiority of breastfeeding and explain how formula feeding may impact on the maintenance of breastfeeding.
> • Health workers should keep informed about developments in research in infant formula and associated products from scientific journals in addition to reading materials provided by manufacturers.
> • Samples of infant formula may be provided to health care workers for the purposes of professional evaluation and research or for educating parents on the correct preparation of formula.
> • Representatives of infant formula companies may call on health workers to provide factual educational information on products or infant nutrition in general. Likewise, a health worker may contact an infant formula company for factual or educational information. (MOH 1997, p 30).

2. Baby Friendly Hospital Initiative

The Baby Friendly Hospital Initiative was launched in New Zealand in Parliament on 1 August 2001. New Zealand was the 133rd country in the world to launch this initiative (Lamb 2001) so New Zealand was rather late to get this initiative under way. Maternity facilities are now trying to achieve accreditation for being a Baby Friendly

Hospital. The first maternity facility to achieve this status was Birthcare, Auckland, in 2002.

The next phase of this programme will be to ensure that community organisations and their facilities are also Baby Friendly accredited. These community organisations may include the Plunket Society and possibly Primary Health Organisations.

Recognition of the Importance of Breastfeeding in Other Government Documents

"The New Zealand Health Strategy"

The Ministry of Health published the "New Zealand Health Strategy" in December 2000. It states that one of its priority population health objectives is to "Improve nutrition" (MOH 2000, p11) Whilst this document does not state exactly how this is to be achieved the follow-up document "Implementing the New Zealand Health Strategy 2003" states that increasing breastfeeding is an important method of improving the nutrition of New Zealanders (MOH 2003, p22).

"Food and Nutrition Guidelines for Healthy Infants and Toddlers (aged 0 to 2) – a background paper"

The "Food and Nutrition Guidelines for Healthy Infants and Toddlers (aged 0 to 2) – a background paper" (MOH 2000) emphasises what is appropriate food to give to children aged 0-2 years. Once again it highlights that breast milk is the ideal food for infants and that it not only has nutritional benefits for the infant but also other health benefits for the child and mother. This document notes contraindications to breastfeeding, factors affecting breastfeeding and where to obtain assistance with breastfeeding difficulties. It states that ideally exclusive breastfeeding should occur for the first four to six months of life and weaning on to solid food should occur when the infant is developmentally ready rather than a definite specific age.

The New Zealand Public Health and Disability Act 2000

Under Section 88 of the New Zealand and Disability Act 2000, the government purchases maternity care from a lead maternity carer. The lead maternity carers may be a midwives, general practitioners or obstetricians. They take responsibility for

planning the woman's care throughout her pregnancy and post partum period. Part of this responsibility includes providing antenatal health education, which includes information on breastfeeding. The lead maternity carers are also required to support the maternity facility's implementation of the Baby Friendly Hospital Initiative (MOH 2002)

Breastfeeding: A Guideline to Action

"Breastfeeding: A Guide to Action" was released in November 2002 by the Ministry of Health. This stated that an action plan for breastfeeding was required as breastfeeding rates had not improved over the past ten years and Pacific and Maori rates were even lower than all other ethnic groups (MOH 2002, p1). The document has a Foreword written by the former Minister of Health, Annette King, and she recommends that all relevant parties in the health sector, from policy makers to service providers will be guided by it. The outcome expected from this action plan is an improvement in the breastfeeding rates of Maori and Pacific peoples and an overall increase in the breastfeeding rate for all New Zealanders.

The goals for the action plan are

- to establish a national intersectoral breastfeeding committee
- to achieve baby friendly hospitals throughout New Zealand
- to gain active participation of Maori and Pacific whanau / family to improve breastfeeding promotion, advocacy and support
- to establish nationally consistent breastfeeding reporting and statistics
- to increase breastfeeding promotion, advocacy, and co-ordination at both national and local levels
- to ensure breastfeeding women can access ante-natal education
- to ensure high quality and ongoing post-partum care. (MOH 2002, p3)

This action plan gives breastfeeding target rates. These are as follows:

- to increase the breastfeeding (exclusive and fully) rate at 6 weeks to 74% by 2005 and to 90% by 2010
- to increase the breastfeeding (exclusive and fully) rate at 3 months to 57% by 2005 and to 70% by 2010
- to increase the breastfeeding (exclusive and fully) rate at 6 months to 21% by 2005 and to 27% by 2010 (MOH 2002 p10)

Chapters 5 and 6 discuss the rates of breastfeeding and the likelihood of achieving these percentages.

Whilst this document gives a directional statement about how to improve breastfeeding in New Zealand, there have been some criticisms of it. It is felt that it emphasises initiation of breastfeeding rather than maintenance. As already discussed, New Zealand initiation rates compare favourably to other OECD countries. Other criticisms relate to the lack of public consultation and peer review. Another criticism is that it is unclear how the breastfeeding targets were established.

In this document the Minister of Health wrote the Foreword and states in this

> It is my hope that all relevant parties in the health sector, from policy developers to service providers, will be guided by it. (MOH 2002, piii)

This statement indicates that the Minister views the document as a framework rather than a strict code to follow.

Other Breastfeeding Friendly Policies Adopted by the Government

Maternity leave and parental leave provisions

Provisions for maternity leave came into being in 1987. This leave allowed for 12 months unpaid leave after the baby was born which meant that the mother (or other parent) could have an extended period of leave knowing that they had job security. Conditions applied to be eligible for this leave. The major condition was that the person applying for the leave had to have been working for at least the last 12 months with the same employer.

This leave was further reformed in July 2002 when a provision of the first three months of leave was changed to be paid leave. There is a maximum amount of money that the parents are eligible for. The payment comes out of government funds. Once again the condition is that the person has to have been working for the same employer for the past 12 months for at least an average of 10 hours a week. Until December 2005, mothers who were self employed were not eligible. Other changes that occurred

at this time included lengthening the period of paid leave to 14 weeks and offering it to women who have been in the same job for six rather than 12 months.

Both these policies have a potential impact on breastfeeding. However, the one with the greatest impact is the policy that allows for paid parental leave. This means that women can be at home full time with their baby without the pressures of returning to the workforce in order to earn money. As discussed in Chapter 3, women are more likely to give up breastfeeding if they return to work in the first three months after birth.

The disadvantage with this policy is that women who are in casual employment are not eligible. Women who are employed on a casual basis are usually of low socio-economic status where breastfeeding rates are lower than for other women.

Adoption of Breastfeeding Policies by Agencies

District Health Boards

District Health Boards (DHBs) have been supplied with Ministry of Health toolkits regarding nutrition. One of the topics covered in this is breastfeeding. They are all encouraged to ensure that breastfeeding is high on their agenda. One of the ways that they are encouraged to achieve a greater breastfeeding culture within the community is to ensure that the maternity hospital facilities are Baby Friendly accredited. Six District Health Board Breastfeeding Policies were examined.

Content of the Policies

Whilst the policies have different formats the following are noted in all.

Purpose

All policies state that the purpose of the policy is to protect, promote and support breastfeeding during the antenatal, intrapartum and postnatal period.

Linking Documents

All the policies state that they are associated with the following international and national documents:

- Ten Steps to Successful Breastfeeding, (WHO/UNICEF, 1989)
- International Code of Marketing of Breastmilk Substitutes, (WHO, 1981)
- WHO and UNICEF Baby Friendly Hospital Initiative Documents for Aotearoa New Zealand (Implementation group for the NZ Breastfeeding Authority 2000).

Some of the policies also state other additional international or New Zealand governmental documents to which they are related. These include:

- Food and Nutrition Guidelines for Healthy Infants and Toddlers (aged 0-2 years) – a background paper (MOH 2000)
- Infant Feeding – Guidelines for NZ Health Workers (MOH 1997)

Scope of the Policy

Some of the policies state that their scope is for employees of the DHB whilst others state that the scope also includes independent midwives who use the DHB facilities.

Details of the Policy

All of the policies give details of how the policy will be communicated, how the staff will be trained to meet the requirements of the BFHI initiative (18 hours of breastfeeding training in the past five years for nursing and midwifery staff), antenatal education given to women using the DHB for their antenatal care, how to assist initiation of breastfeeding (skin to skin contact with the baby in the first half hour of birth, babies only having breast milk unless there are medical reasons for supplementary feeding, baby in the same room as the mother, baby deciding when they will breastfeed, and no pacifiers, dummies or artificial teats given to the baby) and information given to the women on support groups in the community.

One of the policies also details the training that other hospital personnel require – this includes four hours in the past five years for medical staff and three hours in the past five years for other allied health and support staff. The support staff include physiotherapists, dieticians, health care assistants, ward clerks and reception staff.

The policies were all written at a high level, however, they are intended for the use of staff and not for the use of mothers who use the facility. On discussing the policies with the hospital lactation consultants they stated that within the facility they had the "10 Steps to Breastfeeding" in a poster form for the patients and their families to read. Some of the lactation consultants in interview stated that they had staff within their facility who had English as a second language so it would be interesting to assess how well they understand the policies.

Royal NZ Plunket Society

Plunket has always had an emphasis on the importance of breastfeeding. Truby King, the founder of the Plunket Society, stated that breastfeeding was the best method of infant feeding. However, it was not until the end of last century that Plunket produced a breastfeeding policy. This policy was first published in 1996 (Royal New Zealand Plunket Society 1996). It discusses how Plunket staff and volunteers are to promote breastfeeding within the organisation. A few years later they also published a policy in response to the World Health Organisation's "International Code of Marketing of Breastmilk Substitutes" (WHO, 1981). This gives details of ensuring that breastmilk substitutes are not promoted within the organisation. The Plunket Society also produces their parent craft booklet entitled "Thriving Under Five". This booklet gives sound 'best practice' advice on breastfeeding for parents, highlighting both the importance of breastfeeding as well as basic breastfeeding problem solving strategies.

The latest breastfeeding policy was published in 2005 (Royal New Zealand Plunket Society 2005). The following is a summary of its contents.

Purpose

Its purpose is to protect, promote and support breastfeeding.

Linking Documents

It states that it is consistent with the following international and national documents:

- The Treaty of Waitangi
- The United Nations Convention on the Right of the Child
- Innocenti Declaration (WHO 1990)

- International Code of Marketing of Breastmilk Substitutes, WHO, 1981
- WHO and UNICEF Baby Friendly Hospital Initiative Documents for Aotearoa New Zealand (Implementation group for the NZ Breastfeeding Authority 2000).

It is also linked to other Plunket policies, which include the "Maori Policy and Protocol" and the "Policy on Compliance with the WHO Code" (Royal NZ Plunket Society 2001, 2004).

Scope of the Policy

The policy is to be adhered to by Plunket staff and volunteers.

Details of the Policy

The policy states that staff are to support exclusive breastfeeding until 6 months of age, provide support and information that enables mothers who breastfeed to have an optimal experience. Within Plunket the services to support breastfeeding are expected to be co-ordinated and it is expected to work with other agencies in the community to promote breastfeeding. The Plunket Society is also expected to promote and support breastfeeding through appropriate education of the staff and volunteers. It is also expected that breastfeeding will be promoted at every opportunity through advocacy, collaboration and participation with other breastfeeding networks and groups.

Where it differs from other policies is that it states that if women decide not to breastfeed, this decision is to be respected and appropriate support and information is to be given.

College of Midwives

Many midwives work independently although many of them belong to the College of Midwives. The College produced a Consensus Statement on Breastfeeding that was ratified by its members in July 2002 (NZ College of Midwives, 2002). This statement also says that the New Zealand College of Midwives is committed to protecting, promoting and supporting breastfeeding. It then makes the following points:

Midwives:

- Are the health professionals with a primary focus in the initiation and the establishment of breastfeeding
- Are committed to the health and well-being of women and acknowledge that breastfeeding has health benefits for women
- Are committed to the health and well-being of babies, and believe that human milk is the optimum food for human babies. Breastfeeding also provides immunological benefits that promote healthy growth and development of infants
- Have a responsibility to provide evidence-based research and culturally appropriate information about infant feeding to women during pregnancy and the postpartum
- Have a responsibility to protect and support the breastfeeding woman and her baby
- Support the World Health Organisation recommendation that babies should be exclusively breastfed until six months of age and with added solids continue breastfeeding into the second year and beyond
- Support the principles of the Baby Friendly Hospital Initiative (BFHI)

(NZ College of Midwives, 2002)

As it is not compulsory for midwives to belong to the College of Midwives, breastfeeding education for midwives was also explored. The emphasis of the Otago Polytechnic Lactation and Infant Feeding paper was to explore the practical and theoretical components of breastfeeding as well as the many issues associated with it (Hickey 2004). The course content included understanding the policies involved with breastfeeding as well as how to manage and support the breastfeeding mother and baby.

La Leche League

This community organisation has the aim of promoting breastfeeding. Because breastfeeding is its sole aim, it fully supports and implements the World Health, UNICEF and World Alliance for Breastfeeding Action statements and policies. It is also an organisation that lobbies communities, organisations and workplaces to promote and enhance breastfeeding.

Child Care Facilities

Childcare facilities in New Zealand vary with policies regarding breastfeeding. It is assumed that they would follow the mothers' wishes regarding infant feeding.

Adoption of Breastfeeding Friendly Policies by Workplace Employers

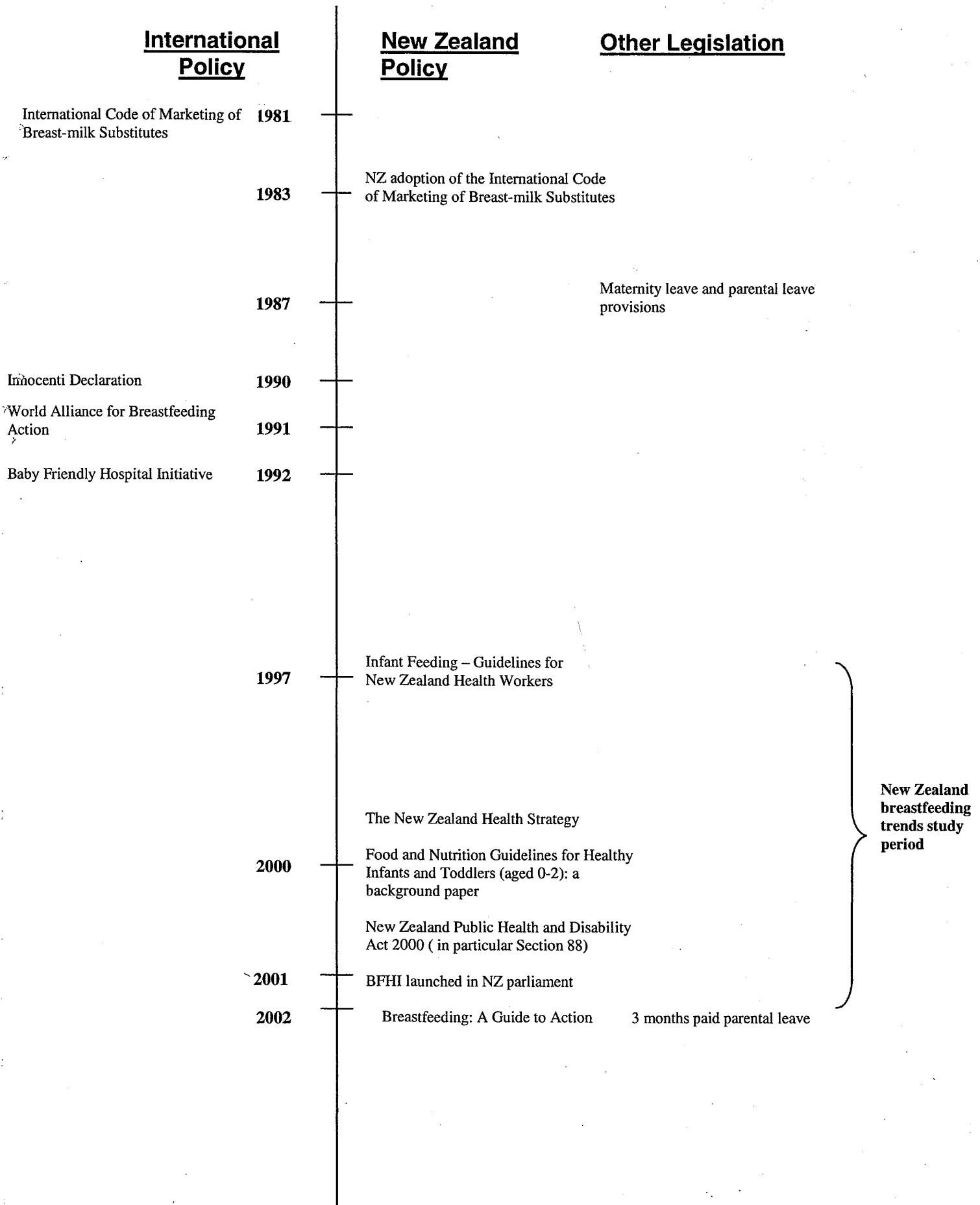
The adoption of breastfeeding policies in workplaces varies from employer to employer. Anecdotally it appears that some workplaces provide a place for babies to be breastfed, or a place where the mother can use a breast pump and store breast milk. Some large organisations also provide onsite childcare facilities. Some organisations also provide for flexible working ties so that women can come in later, leave earlier or take time during the day to breastfeed.

These baby friendly workplace policies vary considerably between employers, as there is no legislation enforcing such policies.

Conclusion

Figure 3 gives a timeline of when the different policies came into being. This figure assists with the interpretation of how different policies overlap with each other. It also shows how the study period of this thesis fits into the overall policy environment.

Figure 3: Breastfeeding Policy Timeline



This chapter has discussed the overarching policies for encouraging breastfeeding. On the whole the international policies encourage the initiation of breastfeeding rather than its continuation. It is not until these policies are put into practice in community health and employment facilities that the continuation rate of breastfeeding will be increased. Government policy also plays a key role in breastfeeding enhancement. Not only is government able to bring international policies into the New Zealand health care system, but it is also able to influence breastfeeding rates through employment legislation. The policy that potentially has the greatest impact on breastfeeding rates is the three month paid parental leave provision.

This chapter also indicates that there are many players responsible for supporting and encouraging breastfeeding. No single policy or co-ordination on its own can change the breastfeeding rates in New Zealand. This suggests that implementing policy and ensuring that it links together is likely to be a messy business.

Community organisations such as Plunket or childcare facilities can make a difference to breastfeeding rates after the initiation period. The other major influence on the continuation of breastfeeding is the workplace but currently nothing can be enforced to make workplaces baby friendly.

CHAPTER 5 - RESULTS

Introduction

This chapter examines trends in breastfeeding and also looks at a major influence of initiation rates – hospital breastfeeding policy. Information used to examine breastfeeding trends is based on quantitative data whilst themes on hospital policy is based on qualitative data. As a result, two different approaches are used to examine the data. The quantitative data are examined using statistical analysis whilst the hospital policy data are analysed using thematic analysis.

This chapter is divided into two. The first section examines the method and results of the quantitative data while the second section looks at the method and analysis and findings of the qualitative data.

Quantitative Data

Method

Source of Data

The Royal New Zealand Plunket Society obtains breastfeeding data at all core contacts. These occur at ages 5-6 weeks, 11-15 weeks and 4–6 months. As part of these contacts the Plunket Nurse asks the mothers about the amount of breastfeeding their infant received in the last 48 hours. During the study period, data from each mother was entered into the Plunket Management System (these forms are no longer in print and the researcher was unable to obtain a copy as there have been none archived). The data were then aggregated for each Plunket sub-branch areas of which over the period of interest there were 741. The information is further aggregated into Plunket branches of which there were 124. It is then further aggregated into areas of which there were 18. The area demarcation lines closely match the boundary areas for the district health boards.

The data analysed was collected between July 1997 to June 2002. These particular years were chosen because the Plunket Society used the same Information Management System over this time. It is difficult to compare these data to earlier or subsequent years as the information collected previously and subsequently has different points of collection (for example the breastfeeding rate for six weeks in the time period studied is five to six weeks, whereas subsequently the time period for the collection of these data is four to six weeks).

Sample Population

The Royal New Zealand Plunket Society has the most complete breastfeeding data. It did not include all children who were breastfed in the country at the ages of interest. Table 3 shows the number of infants who were under one year of age at the time of the 2001 census and the number of infants that were seen by Plunket in 2000 at the different core contacts.

Table 3: Comparison of Census and Plunket Data for 2000

	Maori	**Pacific**	**Other**	**Total Population**
Census 2001	***13,512***	***5,633***	***36,715***	***55,860***
No. of babies seen (5-6 weeks)	5,979	3,509	21,539	31,027
Percentage of babies seen by Plunket (5-6 weeks)	44.2	62.3	58.7	55.5
No. of babies seen (11-15 weeks)	9,221	4,480	34,993	48,694
Percentage of babies seen by Plunket (11-15 weeks)	68.2	79.5	95.3	87.2
No. of babies seen (4-6 months)	8,232	4,283	35,051	47,566
Percentage of babies seen by Plunket (4-6 months)	60.9	76	95.5	85.2

Statistics New Zealand (2006)

This table indicates that Plunket had contact with just over half the population of babies between five to six weeks. However Plunket had contact with a large proportion of the population between 11 to 15 weeks and four to six months. This may indicate that some babies and their mothers did not leave the care of their Lead Maternity Carer until after the five to six weeks Well Child Health Assessment. It is also possible that many families took their infant to a General Practitioner for this assessment as it could then be carried out at the same time as receiving the six week immunisation.

Measures

The breastfeeding definitions are described by Labbok and Krasovec (1990) and can be found in Appendix 1.

In this thesis the results are presented for

- exclusive,
- full,
- exclusive and full breastfeeding combined,
- partial and
- "any" breastfeeding, which is includes a combination of exclusive, full, and partial breastfeeding.

Ethnicity

The second measure that the data examines is ethnicity. The definition that is used for ethnicity is:

> A social group whose members have the following four characteristics: (a) share a sense of common origins (b) claim a common and distinctive history and destiny (c) possess one or more dimensions of collective cultural individuality (d) feel a sense of unique collective solidarity.
> Source: NZ Standard Clarification of Ethnicity, Statistics NZ 1993 (Royal NZ Plunket Society 2002)

The Plunket Nurse only assigns one ethnicity category so that if the mother identifies a number of ethnicities a convention to describe ethnicity is used. If the mother indicates any Maori, they are described as Maori, and if they identify with a Pacific Island group but not Maori, they are categorised as Pacific. All other ethnicities including New Zealand European are described as "other".

Deprivation

At the time that this system (the Plunket Management Information System) was set up, it did not record NZ Deprivation (NZ Dep.) as proposed by Crampton et al (Crampton, Salmond et al. 2000). However the Managers for each area were asked to assess the clinics located within every sub-branch and indicate whether it was in their opinion in a high socio-economic area (NZ Dep. 1-7) according to the model

proposed by the Crampton et al or a low socio-economic area (NZ Dep. 8-10). This model was originally created from data from the 1996 New Zealand Census of Population and Dwellings. The index used nine variables gathered from these data, reflecting eight types of deprivation. These variables (in decreasing importance) are:

Deprivation Type	*Description: proportions of people in small areas*
Communication	With no access to a telephone
Income	Aged 18-59 years receiving a means-tested benefit
Employment	Aged 18-59 years unemployed
Income	Living in households with equivalised[1] income below an income threshold
Transport	With no access to a car
Support	Aged less than 60 years living in a single-parent family
Qualifications	Aged 18-59 years without any qualifications
Owned house	Not living in own house
Living space	Living in households above equivalised bedroom occupancy

(Crampton et al 2000)

Whilst they used Crampton's deprivation maps to assess the clinic, these often were not refined enough to small enough mesh units for them to be completely accurate with their estimation. The other problem with measuring the deprivation status of the clinic was that the mothers who attended that clinic did not necessarily come from the same geographical area. Whilst it is possible to assume that the clinic did have a similar deprivation score as the local community, it is possible that the mothers travelled from another area in order to see the nurse who is stationed in a particular clinic. It is also possible that the clinic deprivation level did not necessarily apply to the individual. Approximately 38 percent of clinics were in the more highly deprived areas. This issue is discussed more fully in the following chapter.

Statistics

Poisson regression, which incorporates a log link function, and robust standard errors was used to analyse the data. The number with various forms of breastfeeding was the

[1] Equivalisation refers to methods used to control for household composition. In this way, for example, the standard of living of a single person of an income with $40,000 could be compared to that of a household consisting of two adults and three children on an income of $40,000.

dependent variable. The total number of clinic visits for each clinic for each time period, the denominator for the rate of breastfeeding, was used as the exposure variable. Variables for ethnicity or level of deprivation were included in the models where comparisons were of interest. Results are presented as rates and relative change in breastfeeding for a five year period with 95 percent Confidence Intervals.

Results

Trends in Breastfeeding over the Past Five Years

The tables below (tables 4,5 and 6) give details of the breastfeeding rates amongst clients enrolled in the Plunket service over the past five years. The number of contacts that were given for the study period for the different age groups were 171,361 for babies aged 5-6 weeks, 263,148 for babies aged 11-15 weeks and 259,994 for babies aged 4-6 months. These data were provided by 535 clinics. Of these 362 were in lower socio-economic deprived communities.

Table 4 shows the breastfeeding rates for infants aged five to six weeks. For this age band breastfeeding rates were approximately 80 percent for any breastfeeding and approximately 65 percent for exclusive/full. While it appeared that the trend for exclusive breastfeeding rose, when it was combined with "full" breastfeeding there was no increase.

Table 5 shows that the breastfeeding rates for infants 11-15 weeks were approximately 70 percent for any breastfeeding and approximately 50 percent for exclusive/full. Once again, while the trend appeared to rise for exclusive breastfeeding over the study time, when this was combined with "full" breastfeeding there was no increase.

Table 6 shows that at four to six months the breastfeeding rates were approximately 60 percent for any breastfeeding and 19 percent for exclusive/full breastfeeding. The trend for exclusive /full breastfeeding increases from 17.4 percent in 1997 to 20.9 percent in 2002. This equates to an increase in ratio terms of 1.17 for five years.

Table 4: Prevalence of Breastfeeding (95% Confidence Intervals) at 5-6 weeks of age for 1997 - 2002

	Exclusive Breastfeeding by percentage	Full Breastfeeding by percentage	Exclusive/ Full Breastfeeding by percentage	Partial Breastfeeding by percentage	Any Breastfeeding by percentage
1997	37.0 (35.0, 39.0)	25.7 (24.1, 27.3)	62.6 (61.4, 63.9)	16.7 (15.7, 17.6)	79.3 (78.5, 80.1)
1998	42.5 (40.8, 44.4)	22.2 (20.6, 23.9)	64.7 (63.6, 65.9)	16.1 (15.4, 16.9)	80.9 (80.1, 81.6)
1999	43.6 (41.9, 45.4)	20.6 (19.0, 22.2)	64.1 (62.9, 65.5)	16.0 (15.2, 16.8)	80.1 (79.2, 81.1)
2000	43.6 (41.9, 45.4)	19.9 (18.2, 21.6)	63.4 (62.3, 64.7)	16.0 (15.2, 16.9)	79.5 (79.0, 80.3)
2001	45.0 (43.4, 46.6)	18.2 (16.8, 19.8)	63.2 (62.1, 64.4)	16.3 (15.4, 17.2)	79.5 (78.7, 80.3)
2002	45.6 (43.9, 47.4)	18.7 (17.3, 20.3)	64.3 (63.2, 65.6)	15.9 (15.0, 16.8)	80.2 (79.4, 81.0)
Ratio of relative increase in breastfeeding over 5 years	1.16 (1.1, 1.2)	0.73 (0.67, 0.80)	1.00 (0.97, 1.02)	0.98 (0.91, 1.04)	1.00 (0.98, 1.01)

Table 5: Prevalence of Breastfeeding (95% Confidence Intervals) at 11-15 weeks of age for 1997 - 2002

	Exclusive Breastfeeding by percentage	Full Breastfeeding by percentage	Exclusive/ Full Breastfeeding by percentage	Partial Breastfeeding by percentage	Any Breastfeeding by percentage
1997	23.4 (21.8, 25.2)	25.1 (23.7, 26.4)	48.5 (47.1, 49.9)	20.7 (19.8, 21.7)	69.2 (68.3, 70.2)
1998	29.5 (28.0, 31.1)	21.7 (20.5, 23.0)	51.2 (50.1, 52.4)	19.1 (18.3, 19.8)	70.3 (69.4, 71.2)
1999	30.4 (28.9, 32.0)	20.1 (18.9, 21.4)	50.5 (49.4, 51.8)	19.6 (18.9, 20.3)	70.1 (69.2, 71.1)
2000	30.3 (28.9, 31.8)	20.4 (19.2, 21.8)	50.8 (49.6, 51.9)	19.2 (18.4, 20.0)	70.0 (69.1, 70.8)
2001	32.0 (30.6, 33.4)	18.6 (17.4, 19.8)	50.5 (49.4, 51.6)	18.9 (17.4, 19.1)	69.4 (68.8, 70.6)
2002	33.1 (31.7, 34.6)	18.3 (17.2, 19.5)	51.5 (50.3, 52.7)	18.2 (17.4, 19.1)	69.7 (68.8, 70.3)
Ratio of relative increase in breastfeeding over 5 years	1.26 (1.19, 1.35)	0.76 (0.70, 0.82)	1.03 (1.00, 1.06)	0.91 (0.87, 0.97)	1.00 (0.98, 1.01)

Table 6: Prevalence of Breastfeeding (95% Confidence Intervals) at 4-6 months of age for 1997 - 2002

	Exclusive Breastfeeding by percentage	Full Breastfeeding by percentage	Exclusive/ Full Breastfeeding by percentage	Partial Breastfeeding by percentage	Any Breastfeeding by percentage
1997	5.3 (4.9, 6.1)	12.1 (11.2, 13.1)	17.4 (16.1, 18.7)	41.0 (39.7, 42.3)	58.3 (57.3, 60.9)
1998	6.8 (6.2, 7.5)	11.4 (10.6, 12.3)	18.3 (17.2, 19.4)	41.6 (40.5, 42.8)	59.9 (59.0, 60.9)
1999	7.3 (6.5, 8.1)	10.7 (9.8, 11.7)	18.0 (16.7, 19.3)	41.7 (40.4, 43.0)	59.7 (58.7, 60.7)
2000	7.5 (6.7, 8.3)	11.2 (10.3, 12.2)	18.7 (17.5, 20.0)	41.2 (40.0, 42.4)	59.9 (58.9, 60.8)
2001	7.8 (7.2, 8.6)	11.0 (10.1, 12.0)	18.9 (17.7, 20.1)	40.2 (39.0, 41.4)	59.1 (58.2, 60.0)
2002	9.0 (8.3, 9.9)	11.9 (11.0, 12.8)	20.9 (19.7, 22.3)	38.3 (37.1, 39.6)	59.3 (58.3, 60.3)
Ratio of relative increase in breastfeeding over 5 years	1.49 (1.32, 1.69)	0.99 (0.90, 1.10)	1.17 (1.07, 1.26)	0.93 (0.90, 0.97)	1.00 (0.98, 1.02)

The following figures (4 and 5) show the breastfeeding trends over time across the three age groups for both exclusive/full as well as "any".

Figure 4: Trends for Exclusive/Full Breastfeeding 1997-2002.

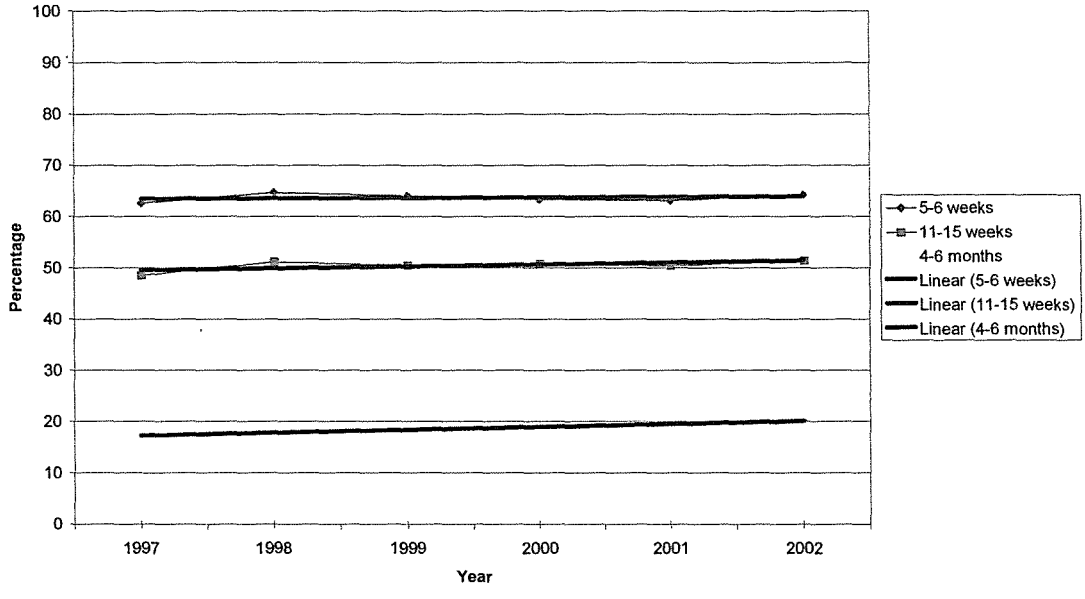


Figure 4 shows that the exclusive / full breastfeeding rates have not changed over the study time for infants aged between five and six weeks. While it appears that the trend line has increased for exclusive /full breastfeeding, for infants aged between 11 to 15 weeks, this is of borderline statistical significance. However the rate has increased for infants aged between four and six months. It rose 3.5 percent in absolute rather than relative terms over the study period.

Figure 5: Trends for "Any" Breastfeeding 1997-2002

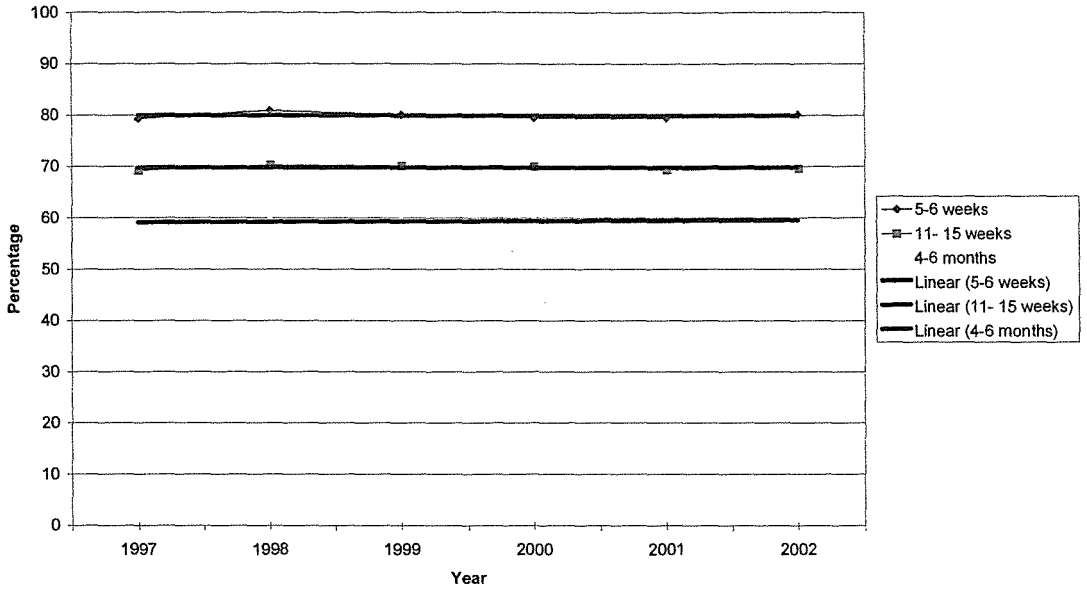
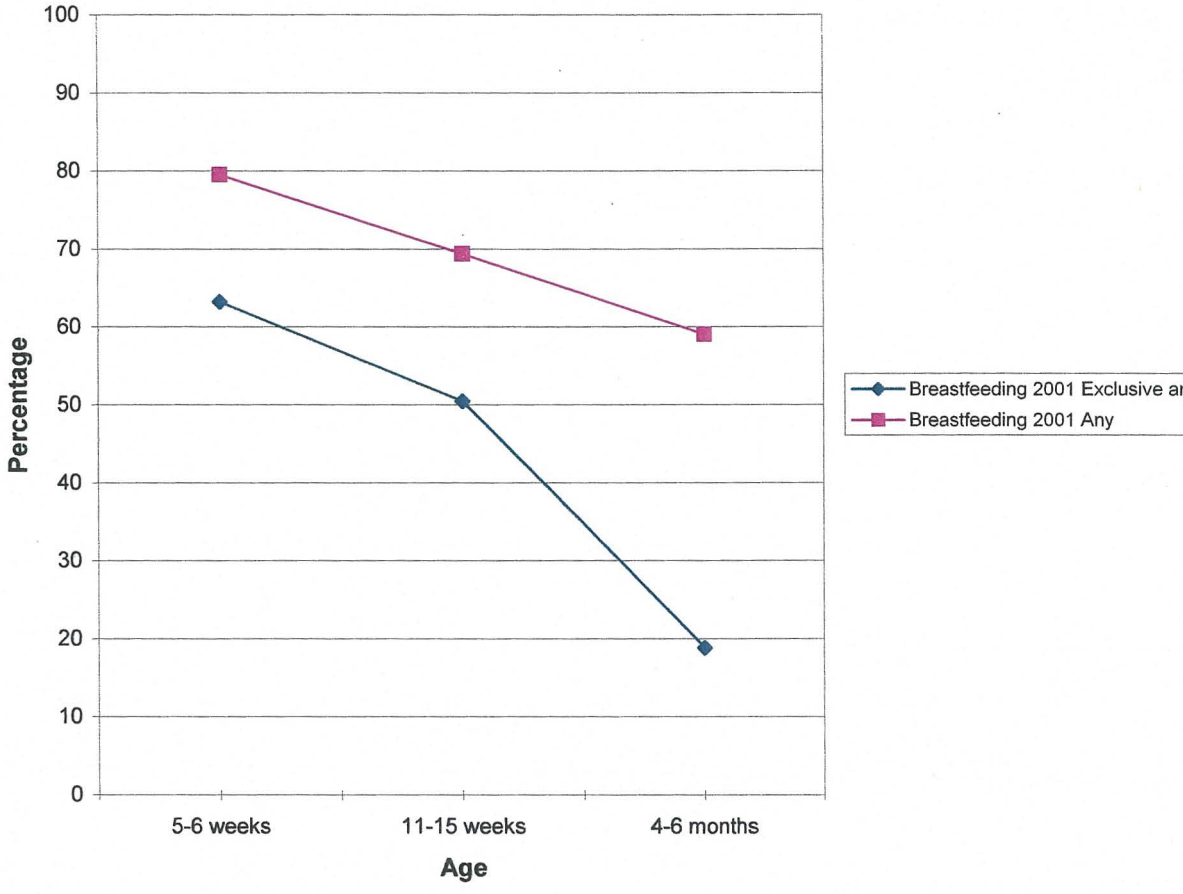


Figure 5 shows that the rate for "any" breastfeeding, has not increased for any age group.

Breastfeeding Rates for 2001

Figure 6 shows the breastfeeding rates for babies of different ages for the year of 2001. As can be seen, breastfeeding decreases as the age of the baby increases. In 2001 at five to six weeks the rate of exclusive/full breastfeeding was 63.2 percent, which dropped to 18.9 percent at four to six months. The rate for 'any' breastfeeding at five to six weeks was 79.5 percent and this dropped to 59.1 percent at four to six months.

Figure 6: Breastfeeding Rates by Age for 2001



Relationship Between Socio-economic Deprivation and Breastfeeding

Tables 7, 8 and 9 show the breastfeeding ratio for exclusive, full, exclusive/full and any breastfeeding in 1997. They also show estimates as ratios for the trends in breastfeeding over a five year period based on data for all six years. The statistical analysis showed that differences for high and low deciles were statistically significant ($p<.0001$) over that whole period.

The rate for low decile/upper decile = 0.96 (95% CI 0.95, 0.97) for six weeks, 0.94 (95% CI 0.93, 0.95) for 11-15 weeks and 0.92 (95% CI 0.90, 0.95) for six months.

The following tables illustrate the relationship between socioeconomic deprivation and breastfeeding for the different age groups. The tables also demonstrate the breastfeeding trends over the years of 1997 to 2002.

Table 7: Prevalence (95% CI) and Estimated Increase (95% CI) in Breastfeeding by NZ Dep. At 5-6 weeks

	NZ Dep 1-7	NZ Dep 8-10	p*
Prevalence of Exclusive Breastfeeding 1997	42.3 (40.5, 44.1)	36.4 (34.5, 38.2)	<0.001
Ratio of relative increase in exclusive breastfeeding over 5 years	1.11 (1.04, 1.19)	1.25 (1.16, 1.36)	0.020
Prevalence of Exclusive / Full Breastfeeding 1997	66.5 (65.4, 67.5)	59.7 (58.4, 61.1)	<0.001
Ratio of relative increase in exclusive / full breastfeeding over 5 years	0.99 (0.97, 1.02)	1.02 (0.99, 1.06)	0.181
Prevalence of Any Breastfeeding 1997	81.5 (80.7, 82.2)	78.1 (77.1, 79.1)	<0.001
Ratio of relative increase in any breastfeeding over 5 years	1.00 (0.98, 1.01)	1.00 (0.97, 1.02)	0.848

**p for interaction term testing for differences between deprivation groups*

This first table (Table 7) shows that the breastfeeding rate for babies with families attending clinics in lower NZ Dep areas (Dep 1-7) is higher than for babies with families who attend clinics with a higher NZ Dep (Dep 8-10), across all categories in 1997. The trend for "any" breastfeeding remained basically unchanged from 1997 to 2002 for both groups. The differences were statistically significant. Although the rate of exclusive breastfeeding increased more rapidly in the more deprived clinics (p=0.02) the rates for exclusive/full did not differ.

Table 8: Prevalence (95% CI) and Estimated Increase (95% CI) in Breastfeeding by NZ Dep. at 11-15 weeks

	NZ Dep 1-7	NZ Dep 8-10	p*
Prevalence of Exclusive Breastfeeding 1997	28.9 (27.4, 30.4)	23.2 (21.6, 24.8)	<0.001
Ratio of relative increase in exclusive breastfeeding over 5 years	1.22 (1.13, 1.32)	1.31 (1.22, 1.50)	0.112
Prevalence of Exclusive / Full Breastfeeding 1997	53.0 (51.9, 54.0)	45.3 (43.9, 46.6)	<0.001
Ratio of relative increase in exclusive / full breastfeeding over 5 years	1.02 (0.99, 1.05)	1.06 (1.01, 1.11)	0.19
Prevalence of Any Breastfeeding 1997	71.8 (71.0, 72.6)	67.3 (66.1, 68.4)	<0.001
Ratio of relative increase in any breastfeeding over 5 years	1.00 (0.98, 1.02)	1.00 (0.97, 1.02)	0.946

**p for interaction term testing for differences between deprivation groups*

Once again this table (Table 8) shows that at age 11-15 weeks there was a greater percentage of breastfeeding in the families who attended a clinic in Dep 1-7 than those families who attended a clinic in Dep 8-10. There is a significant increase for exclusive breastfeeding for both socio-economic groups, although the difference between the trends was not significant. The increasing trend in exclusive/full breastfeeding was significant for the more deprived group, however, the difference in the trends between the groups was not significant.

Table 9: Prevalence (95% CI) and Estimated Increase (95% CI) in Breastfeeding by NZ Dep. at 4 – 6 months

	NZ Dep 1-7	NZ Dep 8-10	p*
Prevalence of Exclusive Breastfeeding 1997	6.2 (5.6, 6.9)	5.5 (4.7, 6.3)	0.129
Ratio of relative increase in exclusive breastfeeding over 5 years	1.50 (1.29, 1.76)	1.49 (1.22, 1.83)	0.971
Prevalence of Exclusive / Full Breastfeeding 1997	18.4 (17.3, 19.6)	15.4 (14.1, 16.7)	<0.001
Ratio of relative increase in exclusive / full breastfeeding over 5 years	1.19 (1.07, 1.32)	1.16 (1.02, 1.31)	0.726
Prevalence of Any Breastfeeding 1997	61.2 (60.3, 62.6)	56.6 (55.3, 57.9)	<0.001
Ratio of relative increase in any breastfeeding over 5 years	1.00 (0.98, 1.03)	1.00 (0.96, 1.04)	0.799

**p for interaction term testing for differences between deprivation groups*

This table (Table 9) once again shows that during the period of 1997 to 2002, the families who attended a clinic in NZDep 1-7 were more likely to breastfeed than their counterparts who attended a clinic in NZDep areas 8-10. As expected, very few people were exclusively breastfeeding in either group at this age, however, the trend for this was increasing over time for both groups. The table also shows that the rates of exclusive and exclusive/full breastfeeding increased in both groups.

All these tables (Tables 7, 8 and 9) demonstrate a difference in breastfeeding for all ages between families attending a clinic in the higher socio-economic areas (1-7) and the lower ones (8-10). All show that the families attending a clinic in the higher socio-economic areas are more likely to breastfeed than the families attending a clinic in the lower socio-economic areas at the different age groups. The difference in breastfeeding rates is the greatest at 11-15 weeks of the child's age.

As it is likely that the families who attend the clinics in the lower socio-economic deprived areas are also from a higher socio-economic background, these figures do seem to show that mothers in the higher socio-economic class are more likely to breastfeed. This will be discussed in further detail in the following chapter.

Relationship Between Ethnicity and Breastfeeding

The following tables (10, 11 and 12) illustrate the relationship between ethnicity and breastfeeding for the different age groups. The tables also demonstrate the breastfeeding trends over the years of 1997 to 2002.

Table 10: Prevalence (95% CI) and Estimated Increase (95% CI) in Breastfeeding by Ethnicity at 5 – 6 weeks

	Maori	Pacific	Other	p*
Prevalence of Exclusive BF 1997	31.4 (29.5, 33.4)	35.3 (32.7, 38.2)	42.9 (41.2, 44.6)	<0.001
Ratio of relative increase in exclusive breastfeeding over 5 years	1.32 (1.20, 1.45)	1.19 (1.06, 1.33)	1.13 (1.07, 1.21)	0.031
Prevalence of Exclusive/Full BF 1997	55.8 (54.3, 57.3)	56.4 (54.4, 58.4)	67.0 (66.0, 68.1)	<0.001
Ratio of relative increase in exclusive /full breastfeeding over 5 years	1.03 (0.99, 1.08)	1.03 (0.98, 1.09)	0.99 (0.97, 1.02)	0.227
Prevalence (95% CI) of Any Breastfeeding at 1997	75.3 (74.1, 76.5)	80.2 (78.9, 81.5)	81.4 (80.7, 82.2)	<0.001
Ratio of relative increase in any breastfeeding over 5 years	0.98 (0.96, 1.01)	1.00 (0.98, 1.03)	1.00 (0.98, 1.01)	0.53

** p for interaction terms, testing for differences in prevalence and trends for ethnicity*

Table 10 shows that breastfeeding rates in 1997 were significantly different for the three ethnic groups for exclusive, exclusive/full and any breastfeeding at age 5-6 weeks. Maori had the lowest rates. Exclusive breastfeeding increased significantly in all three groups, however, the trends did not differ significantly between the groups. The trends for exclusive/full and any breastfeeding were not significant.

Table 11: Prevalence (95% CI) and Estimated Increase (95% CI) in Breastfeeding by Ethnicity at 11-15 weeks

	Maori	Pacific	Other	p*
Prevalence of Exclusive BF 1997	16.6 (15.4, 18.0)	21.7 (19.2, 24.6)	29.8 (28.5, 31.3)	<0.001
Ratio of relative increase in exclusive breastfeeding over 5 years	1.59 (1.42, 1.77)	1.26 (1.05, 1.52)	1.23 (1.14, 1.32)	0.007
Prevalence of Exclusive/Full BF 1997	37.3 (35.9, 38.7)	43.6 (42.0, 45.2)	53.9 (52.9, 54.9)	<0.001
Ratio of relative increase in exclusive /full breastfeeding over 5 years	1.14 (1.07, 1.21)	1.02 (0.99, 1.08)	1.02 (0.96, 1.05)	0.004
Prevalence (95% CI) of Any Breastfeeding at 1997	62.4 (61.3, 63.6)	70.1 (68.5, 71.7)	71.9 (71.1, 72.7)	<0.001
Ratio of relative increase in any breastfeeding over 5 years	1.00 (0.97, 1.04)	0.99 (0.96, 1.03)	1.00 (0.98, 1.02)	0.900

** p for interaction terms, testing for differences in prevalence and trends for ethnicity*

Table 11 shows that breastfeeding rates in 1997 were significantly different for the three ethnic groups for exclusive, exclusive/full and any breastfeeding at age 11-15 weeks. Maori had the lowest rates. Exclusive breastfeeding increased significantly in all three groups. The trends for exclusive/full increased significantly for Maori but were not significant for the other ethnic groups. The trends for any breastfeeding were not significant.

Table 12: Prevalence (95% CI) and Estimated Increase (95% CI) in Breastfeeding by Ethnicity at 4-6 months

	Maori	Pacific	Other	p*
Prevalence of Exclusive BF 1997	3.6 (3.0, 4.4)	5.6 (4.3, 7.2)	6.5 (5.9, 7.1)	<0.001
Ratio of relative increase in exclusive breastfeeding over 5 years	1.41 (1.09, 1.81)	1.40 (0.93, 2.11)	1.54 (1.34, 1.77)	0.790
Prevalence of Exclusive/Full BF 1997	12.7 (11.6, 13.8)	15.7 (13.8, 17.9)	18.4 (17.4, 19.6)	<0.001
Ratio of relative increase in exclusive /full breastfeeding over 5 years	1.12 (0.97, 1.29)	1.09 (0.89, 1.34)	1.20 (1.09, 1.32)	0.616
Prevalence (95% CI) of Any Breastfeeding at 1997	51.0 (50.6, 53.2)	59.6 (57.5, 61.7)	61.1 (60.2, 62.0)	<0.001
Ratio of relative increase in any breastfeeding over 5 years	1.02 (0.98, 1.06)	1.00 (0.97, 1.02)	1.00 (0.95, 1.05)	0.79

** p for interaction terms, testing for differences in prevalence and trends for ethnicity*

Table 12 shows that breastfeeding rates in 1997 were significantly different for the three ethnic groups for exclusive, exclusive/full and any breastfeeding at age 4-6 months. Once again, Maori had the lowest rates. Exclusive breastfeeding increased significantly for Maori but was not significant for Pacific or "other". The increase for exclusive/full breastfeeding for "other" was significant but not for Maori or Pacific. The trends for any breastfeeding were not significant for any ethnic group.

Tables 10, 11 and 12 show that for all age groups, Maori has a lower breastfeeding rate than other ethnic groups. Pacific people and other ethnic groups have similar 'any' breastfeeding rates but "other" tend to have a higher rate of exclusive and exclusive/full breastfeeding rates. The trends tend to have the greatest increase across all ethnicities and age groups for exclusive breastfeeding, while the trends for other patterns of breastfeeding across the ethnic groups tend to be mainly insignificant.

Qualitative Data

Method

This part of the study focused on the development, implementation and evaluation of breastfeeding policy. Hospital policy, specifically public hospital policy, was examined. Hospital policy was chosen because there is currently a drive from the Ministry of Health to ensure that all maternity hospitals become "Baby Friendly". It is hoped that lessons learnt from implementing breastfeeding policy in the hospital setting will impact on the process of implementing it to the community. This portion of the study did not set out to be an in-depth qualitative study but one that allows the researcher to highlight policy implementation issues.

Source of Data

Purposeful sampling was undertaken to gather the information on hospital breastfeeding policy. This allows for obtaining information-rich cases for in-depth study (Patton 1990). The specific method of purposeful sampling was maximum variation sampling from a possible sample of twenty one district health boards. Both secondary and tertiary hospitals were included – one very large urban tertiary hospital servicing a population of more than a million people, a tertiary hospital serving a population of almost half a million people, two secondary hospitals serving populations of approximately one hundred thousand people and two small rural hospitals serving populations of less than fifty thousand people. An attempt was also made to include the ethnic variations that can be found across the country. Prior to commencing this qualitative part of the study, ethics approval was granted from the University of Otago Ethics Committee[2]. The members of staff who were approached to give interviews were lactation consultants. If they were agreeable, they were then sent an information sheet, consent form and the type of open ended questions that they would be asked. In order to obtain the variation sampling as described above, seven lactation consultants representing each of the hospitals above were contacted and six agreed to take part. The following table gives the percentages of the different ethnic groups in the regions that were examined.

[2] The original Ethics Approval Letter is unavailable due to it being burnt in a large office fire.

Table 13: Percentages of the Ethnic Groups for the Different Regions

	European	Maori	Pacific	Asian	Other
Hospital A (large tertiary facility serving a population of more than 500,000)	68.5	11.6	14.0	13.8	1.2
Hospital B (secondary hospital)	80.0	23.3	3.4	2.1	0.2
Hospital C (small rural facility)	85.1	18.5	2.4	3.1	0.4
Hospital D (small rural facility)	95.4	8.7	0.6	0.8	0.2
Hospital E (large tertiary facility)	91.8	6.8	1.8	4.1	0.5
Hospital F (secondary facility)	93.4	11.3	1.4	1.0	0.1
New Zealand	**80.1**	**14.7**	**6.5**	**6.6**	**0.7**

(Statistics New Zealand, 2002)

Information was collected via a taped telephone interview. The interview utilised an open questioning technique where the respondents were asked about their understanding of breastfeeding policy for the organisation in which they worked. Areas that were covered in the interview included:

- Whether their organisation had a breastfeeding policy.
- How this related to the government's document entitled "Breastfeeding: A Guide to Action".
- How the policy was communicated to staff within the organisation.
- How it was evaluated.
- What barriers there were to implementation of the policy.
- Overall how effective the policy was perceived to be.

The tape was then transcribed and analysed for themes using content analysis. This is the process of identifying, coding and categorising the primary patterns of the data (Patton, 1990). The themes that were utilised are discussed below in the results section.

Some of the themes were consistent across all hospitals whilst others only emerged for one hospital but were of major importance. The following describes the major themes that emerged.

Results

Theme 1 – Did the hospital have a policy?

All of the responding DHBs did have a breastfeeding policy. The actual policies are not attached in this thesis as once again it would identify the participating hospitals. However, breastfeeding policies are available from the district health boards' internet sites. These may be accessed via www.moh.govt.nz/dhbs.

Comments made by the interviewees included the following:

> "We, our policy, our breastfeeding policy is currently still in draft form".

> "Well, we have a breastfeeding policy that certainly includes the words promote, protect, you know the same ones as the WHO.... So, our policy statement says um , that all ...staff have a role in implementing the Breastfeeding Policy and will be trained in the skills necessary to implement it".

Theme 2 – the motivation for the policy

The motive for the formation of these policies appears to have been "The Baby Friendly Hospital Initiative" as a directive has come from the Ministry of Health requiring hospitals to become "Baby Friendly" accredited. The following comments illustrate this:

> "Mainly the policy is coming from the Baby Friendly Hospital Initiative".

> "Um, we very much work from the BFHI Aotearoa documents New Zealand"

> "We're under the Baby Friendly Hospital Initiative."

"...but fortunately because the Ministry of Health is actually breathing that directive, you know that BFHI is now appearing at much higher management, you know what I mean, so up higher than my line manager."

Theme 3 – relationship between the policy and the government document "Breastfeeding: A Guide to Action"

On the whole the respondents felt that while the principles of their policy were similar to the document "Breastfeeding: A guide to action" they felt that the government document was too high level and had a wider focus than just hospitals:

"... the WHO documents as adapted for New Zealand is actually where we took the policy from because our policy by the very nature has to go to the World Health Organisation standards and the Guide to Breastfeeding sort of, is probably a bit more wishy washy"

"Its [Breastfeeding: A Guide to Action] definitely looking into community because it has to be all encompassing... I mean I just sort of think that because you know the Baby Friendly Hospital is all about initiating breastfeeding within a hospital setting and so therefore we strictly go by the ten steps, is actually the guiding basis and we've got very little leeway apart from that whereas the "Guide to Action" does take it that jump further... so we didn't specifically use that as a reference"

"...we didn't specifically use that as a reference. I am aware of the document. Um, we very much work from you know the BFHI Aotearoa documents New Zealand".

However, one of the respondents felt that their policy was closely related to the document "Breastfeeding: A guide to Action" and was able to state how it related to all the action plan steps:

"It really meets all their goals I guess, um, Step I is a Baby Friendly Hospital, is a goal of the action plan, Maori and Pacific Island input and their awareness, it's the audit of the process and we've got state, it's the breastfeeding promotion by consultation, we cover the antenatal education um and it's to increase breastfeeding rates, support the universal definitions and stuff like that... and to encourage good post partum care so its all those things".

Theme 4 – Communicating the Policy to Staff and Patients

Some of the respondents stated that the communication of the policy was not too difficult. They mentioned a number of ways that this was achieved. Ways included posters on the wards, internet and intranet, staff education group education and as one-on-one education sessions:

"...its up on the wall in a poster format...also in every room in our post natal areas and its in every, well it's in every area actually".

"...a copy of it there in the office and on the internet".

"There are five copies in this area, one in delivery suite, one in post natal ward, one in the neo-natal unit and one in the children's ward".

Theme 5 – Communication Difficulties of the Policy to Staff

There were several issues that made communicating the policy to the ground level staff difficult. The first of these was if the policy was still in draft form it often was not accessible by the staff:

"...it is rather hard when the system is so slow getting it from being written to getting where the staff can access it...to give them something that says the second draft it's not actually quite the same as saying here is the policy."

At some hospitals it was difficult to ensure that the policy was communicated to all staff. There were numerous reasons for this. Frequent nursing and midwifery staff changes meant that there was always at least one new member of the team who had not had any education relating to the policy. Whilst they might have been shown the location of the policy when they first entered the ward, it was difficult for them to have time to take the information on board, as the workload was large:

> "But we've got nearly 200 nursing and midwifery staff and when I um look at our data base on education, we've also got a database on those who have left the hospital so those have already been trained and left the hospital are almost as great as those who are still here. So no matter how much training you do, there's always new staff coming."

At some hospitals there was also limited education time for the staff to learn about the breastfeeding policy. It is expected that nurses and midwives will receive 18 hours of breastfeeding education in order for the facility to attain Baby Friendly Hospital accreditation.

There were often competing needs for the education of staff in tertiary hospitals. This was because they had a higher proportion of complicated deliveries and sick mothers so the staff needed to be skilled in ensuring that these mothers were safely looked after – and to achieve this skill, education was required:

> "...staff have to be on board with pain relief, they have to be on board with IV fluids and um, any new staff are just coping with all sorts of things..."

Another difficulty was a lack of resources for educational purposes or policy development:

> "We're still doing staff education but there's been a bit of a halt to that because of you know financial restrictions."

> "...our big frustration in this hospital at the moment is that they've just completely gutted the education centre and one of our big issues is finding space to do workshops..."

> "...This one [policy] is still in second draft...but the person who is actually doing this is our quality manager and the typist who's been working so hard and they're both just been made redundant".

There was also difficulty ensuring that the policy was relayed to casual nursing and midwifery staff. When agency nurses were required or staff from other wards, there was not the time to ensure that they were familiar with the policy and the implications of it for working in the area:

> "...we have a page under policy responsibility...'casual staff to be informed of it and to work within the policy'. We've got all this. It's all written in there, um, and as I say, it hasn't got to the next step of being freely available."

> "And so um, we are trying to get some of the bureau staff that come to the hospital to come to the breastfeeding study day...there are certain ones from the bureau that they won't take but um, they get desperate and will take anybody at times as there never seems to be enough staff around."

Within the Baby Friendly Hospital Accreditation was the requirement that all non-nursing staff also received some breastfeeding education (three hours a year). This also caused difficulties with the staff as they did not understand why they needed education about the importance of breastfeeding and the ways to promote this:

> "Every single staff member gets orientated to the policy um and of course at study days and things...every single staff member irrespective of their denomination...medical records or orderly..."

It is assumed that the rationale behind this recommendation in the Baby Friendly Hospital Initiative is so that all staff other than nurses and midwives working in the

ward are promoting breastfeeding and not making comments suggesting that the mothers could just try giving a bottle of formula to assist with settling the baby. However there was often resistance to the initiation of the education for these other staff:

> "Yep... and they all have to do it, and the first hurdle...they have to do three hours education. The first 20 minutes I have to explain to them why it's important to them. Once they're got that they're away... And in fact one girl, it was quite interesting one girl who sat there with her arms folded for quite a bit of – she sort of joined in but at the end there she just could not grasp, they couldn't yet a handle on the WHO code thing. They couldn't see that anything like that is actually advertising formula and see sort of argued the point. It was that same woman about a week later. "You, you know that sticker on the fridge there is that advertising" and it was a Karicare sticker in the fridge. And I said "yes it damn well is, good on you, lets get rid of it" And it had been there before and I'd never even noticed it. But it was really interesting that it was that staff member that had been so resistant and I thought wow, maybe this education does work."

Another respondent commented that communicating the policy to the staff was only one step in the process. Getting them to change their practice to comply with policy took time. This was particularly the case in the small rural hospital, which did not have other back-up services on the premises:

> "I see it as um, there is a certain reluctance to go away from what is known...having that in mind because we haven't got a paediatrician next door that we can yell out to if something goes wrong... at the moment some of the staff perceive it as a risk, which it might be."

A couple of respondents also discussed the problems with restructuring the hospital services within their area and the impact or the possible impact that that would have on implementation:

"It's very difficult when you're about to move hospitals...but there's been quite a lot of people who didn't know whether they wanted to move with the hospital and people have left and while people were thinking about leaving, they weren't interested in education".

"So our whole facility is BFHI accredited where you know if you go to another facility , you know, would only be a part of it and that wouldn't mean the same too if a woman was admitted to the general surgery unit, it doesn't mean quite the same."

Theme 6 – overcoming barriers to communicating the policy

Whilst most of the respondents interviewed found that the barriers to communicating the policy were difficult, the hospital that had achieved accreditation found that the barriers were surmountable. She felt that getting the policy to a point where all the staff had received their 18 hours education and having support from management made a huge difference to breastfeeding within her facility:

"And of course it's because we've had the policy up and running and we've done all the consultation and you know is was one of the biggest things, and also education because I had been employed here really. Not anything to do with me. It was just the fact that there was a Lactation Consultant position here so therefore that was the function of the LC is to educate so that the education hours had been attained which is one of the biggest things...although once you get on top of it you see, its really just getting it started. Once you've got it all going and on to a sort of a rotation type thing then it isn't such a big deal. Its just getting it up to that par and because I sis it a little bit by bit its not nearly as bad as suddenly trying to get to know 350 staff or something or other. You know, you don't notice it the same."

A stable workforce also made a difference to implementing the policy:

"...like I've been here for 30 years and there's a lot of us that have been around for a very long time because of the camaraderie of the place really so

you know um you because of that I suppose we seem to have a good strategy going."

Theme 7 – Difficulty Achieving the Percentage of Breastfeeding on Discharge that the BFHI Requires

Several lactation consultants at the DHBs stated that BFHI wanted them to achieve 75 percent exclusive breastfeeding at discharge and they found that this was difficult for the following reasons:

1. Sick women referred there for antenatal, birth and postnatal care. This was particularly the case with tertiary hospitals, where they receive the sick women and complicated cases from the region. As these women are sicker or have had to undergo a caesarean section, it is more difficult for them to exclusively breastfeed:

> "I mean one of our wards, our high risk ward... had 24 percent exclusive yesterday and that's because of the nature of the women that go there".

> "Particularly for a high risk [facility], you know there should be different targets. We shouldn't be the same as [local private facility] who don't do any caesareans, they get our caesareans after they're discharged from here but you know, they don't go 2 hours from here, they go 24 hours after so who has done the surgical care of the initial pain relief, checking their blood pressure, removing their catheter, taking their luers out...how can our statistics be compared with places like that?"

> "...how sick some of these patients are and they have luers in their hands and they can't and they want to but they're grogged up with drugs...sometimes their physical condition is such that there is no sign of any lactogenesis triggering off."

2. High caesarean rate. Some of the interviewees commented that their DHBs had a higher rate of caesarean births than the national average. Caesarean birth has been shown to make breastfeeding more difficult if additional support is unavailable:

> "We have a very high caesarean section rate here – we have one of the highest in the country, well over 30 percent - a lot of those are first time mothers and um, that creates delayed lactation. It may be because of the dehydration."

3. If the baby is sick there is a greater chance that breastfeeding will not be established or will not be exclusive. This may be because the mother and baby are separated at birth (due to the baby going to the Neonatal Intensive Care Unit) so establishing the breastfeeding is more difficult. It may also be more imperative that the baby receives some nutrition as soon as possible for the baby's ongoing well-being, which may mean that establishing lactation is more difficult:

> "...in the case of babies that go to the neo-natal unit...I think when we have difficulty with the baby separated from the mother with this situation...the difficulty of getting expressed breast milk for those babies".

4. Hospital in an area of low socio-economic status. Some of the hospitals are located in areas where there are a high number of low socio-economic women or women of an ethnic minority who are less likely to have attended antenatal care. Lack of antenatal care, ethnic minority and low socio-economic status are risk factors for not breastfeeding:

> "...but if most of our good mums are going to [private obstetric facility] we're left with the late bookers, Samoan women I'm talking

> about...what happens when you have an elderly primip[arous woman] who doesn't speak the language who is a late booker?"

All these factors mean that some staff in the hospitals feel that the hospital is being set up to fail with their breastfeeding rates.

Theme 8 – Evaluation of the Policy

All of the policies were formulated in an effort to receive accreditation for the Baby Friendly Hospital Initiative. Some are still in draft form and are only just starting to be utilised. It is too soon to say what the long-term effect of the policy on breastfeeding initiation will be.

Once a hospital has achieved BFHI accreditation it will not undergo another audit for three years. As yet, it is not clear whether only having an accreditation cycle every three years as opposed to a continuous improvement cycle will make a difference to the breastfeeding initiation rates. It could be argued that having an accreditation audit every three years will mean that the quality of the programme (BFHI) will decrease between audits.

However, this was not borne out by the respondent who already worked in an accredited Baby Friendly Hospital. She commented that they continue to do audits to assess how they are performing:

> "Well, things like audits, audits on breastfeeding stats, audits on skin-to-skin contact. I've done audits on my antenatal breastfeeding classes – those type of things. Its measurements really...we have them ongoingly. I do breastfeeding stats every six months."

Many of the hospitals were also comparing their exclusive breastfeeding rate on discharge with the BFHI recommended rate of 75 percent. What was unclear from the interviews was the correct denominator for this rate. One Lactation Consultant thought that it included all mothers and babies being discharged whilst another

hospital thought that it did not include the babies who required formula for a specific medical reason. It was also unclear whether the rate included mothers and babies who were discharged to another maternity facility (that is, they came to the secondary or tertiary hospital only for delivery and then went to another smaller facility) or whether it only included women who went directly home from the hospital.

One participant stated that it was also very difficult to get the breastfeeding rate up to 75 percent when they saw very sick women:

> "...you're allowed 20 percent who are, medical reasons for supplements that all the rest of course should be exclusive breastfeeding and this is where it is hard because we've got more than 20 percent with medical indications for formula. I would say because of delayed lactation, medical reasons or cultural reasons which aren't medical but you can't...you're not going to be able to get to that 75 percent with that cultural group and perhaps people think I'm negative but I'm a realist and that's what we're up against here and you know I think that it is wonderful to bring up the exclusive breastfeeding but not to give us a target that is you know really beyond...what we can achieve."

However, another participant stated that the 75 percent exclusive breastfeeding rate was possible.

Theme 9 – Ability to be able to discuss the policy with other providers

The ability to discuss the policy with other providers such as independent community midwives impacted on the ability of the district health board making a difference to the breastfeeding within their institution. It was important that if independent midwives were using the hospital for the delivery of the babies of the women under their care, that they knew and supported the breastfeeding policy that was there. Ensuring that they were aware of the policy was relatively easy to achieve with a small area and not too many community midwives, whereas in a bigger centre it was difficult to know who all the individual midwives were as well as ensure that they knew what the policy was:

> "We've got a large um independent [number of lead maternity carers]...There's a lot of them and the reality is that it appears by the deafening silence that any comments about the policy from them that they just blithely ignore it and say that's what we do here and they come in and just do their own thing."

> "Oh look, there is 13 LMCs here and four or so up in [local town] so its pretty useful really".

Some regions had some type of breastfeeding advocacy group that was a combination of health professionals involved with breastfeeding mothers. Where these groups were present, it was felt that the policy could more easily be communicated to the professional groups that were represented on it.

> "...well, local levels, um there is the breastfeeding support group here...that's been established by Crown Public Health...that's been alongside them and they've helped us and um they had a booklet...that they printed for us, so that's been good interaction."

Theme 10 – Differences in Implementing Breastfeeding Policy in Small Compared to Large Hospitals

This theme has already come out of many of the comments from above. In small hospitals it is easier to implement the policy because of a smaller number of staff, a more stable workforce, less casual staff being employed and a smaller number of lead maternity carers that impact on the implementation of the policy.

Conclusion

This chapter has highlighted the results of the two parts of this study. It has shown that the breastfeeding rates have not substantially moved over the past few years. It

has also shown the difficulties involved in implementing policy throughout the health system. These issues are further discussed in the next chapter.

CHAPTER 6 - DISCUSSION

Introduction

This thesis is about breastfeeding trends in the period between 1997 to 2002, examined in the light of national and local breastfeeding policy implementation. It compares the rates of breastfeeding to Ministry of Health breastfeeding targets and barriers to implementation at the local level.

This chapter will highlight some of the issues with the current rates and trends of breastfeeding and will compare these rates to the Ministry of Health's targets for 2005. It will also examine one of the influences on breastfeeding – breastfeeding policy, in particular, breastfeeding policy in maternity facilities.

Principal Findings – Overall rates and trends

As discussed in the previous chapter, over the past few years (from 1997 to 2002) the overall rate of breastfeeding ("any") for the different age groups has not increased appreciably. However the rates for exclusive/full at four to six months rose from 17.4 percent in 1997 to 20.9 percent in 2002. This increase was statistically significant.

The rate for breastfeeding for "Other" or Pacific people was also greater than the rate of breastfeeding for Maori across all the age bands and the rate for "other" was greater than both Pacific people and Maori. Once again the trends for "any" breastfeeding remained basically static over time, although for exclusive breastfeeding it did increase. This was most noticeable for Maori where, over the time period, exclusive breastfeeding increased by a range of five percent to nine percent depending on the age group examined. Once again these results were statistically significant. In spite of this increase, the rate of Maori exclusive breastfeeding remained lower than for those other ethnic groups. These results back up what has been found in the international literature where women of an ethnic minority are less likely to breastfeed than women of the predominant ethnic group (Dubois and Girard, 2003; Dennis, 2002; Birenbaum, Fuchs et al., 1989).

The rate for breastfeeding for families that attended Plunket clinics in less deprived areas (as demonstrated by NZ Dep) was also greater than for families that attended Plunket clinics in more deprived neighbourhoods. This gap is greatest at the four to six month age group. Once again this result has been found internationally with women of lower socio-economic status less likely to breastfeed. This means that more support and education is required to encourage this group to breastfeed (Milligan, Pugh et al., 2000; Birenbaum, Vila et al. 1993).

Meaning of the trends

The Ministry of Health published a policy paper in 1998 (MOH 1998) where they set breastfeeding targets for 2000. The rates of breastfeeding in relationship to the Ministry of Health's Breastfeeding targets for 2000 were not met by a considerable amount. The "exclusive/full" breastfeeding target at three months was considerably higher at 75 percent than the rate achieved of 50 percent. The same occurred for the rate at six months where the target rate for "any" breastfeeding of 70 percent was missed by just over 10 percent (achieved rate of 59.3 percent).

However, these targets were superseded in 2002 in the Ministry of Health's document "Breastfeeding: A Guide to Action" (MOH, 2002).

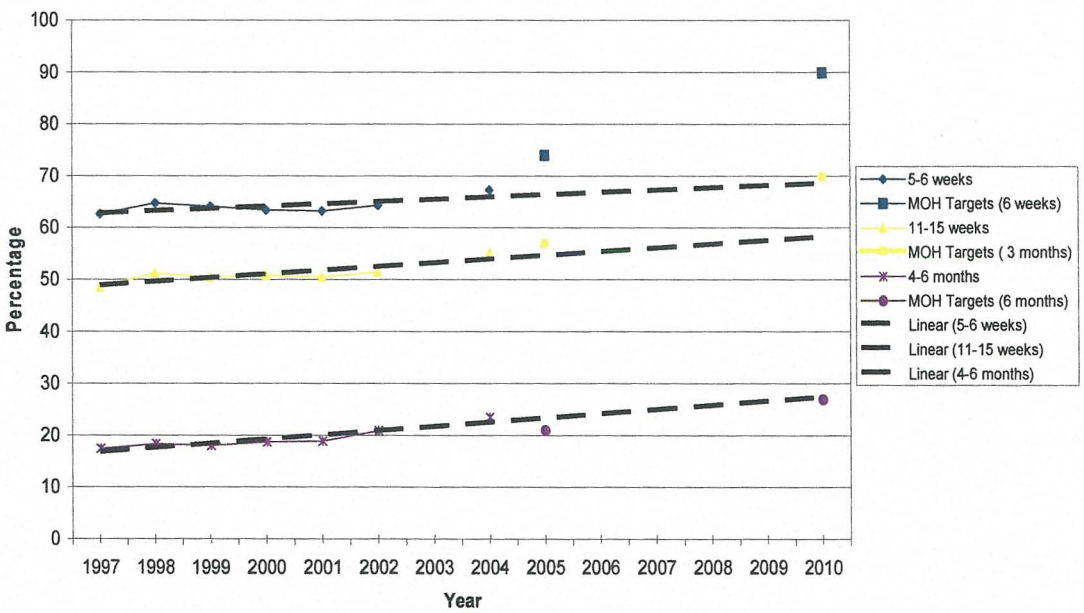
In 2002 the Ministry of Health released new targets for breastfeeding rates. These are as follows;

- to increase the breastfeeding (exclusive and fully) rate at 6 weeks to 74% by 2005 and to 90% by 2010
- to increase the breastfeeding (exclusive and fully) rate at 3 months to 57% by 2005 and to 70% by 2010
- to increase the breastfeeding (exclusive and fully) rate at 6 months to 21% by 2005 and to 27% by 2010 (MOH 2002, p 10).

It is unclear how these targets were obtained. One academic who has been part of a team producing other infant nutrition guidelines stated that she thought that they were "plucked out of the air" (Parnell 2004). The researcher was unable to get further information about this from the Ministry in spite of trying to contact them.

Figure 5 shows the breastfeeding rates for the study period, the breastfeeding rates for 2004 and the Ministry of Health targets as specified in the document "Breastfeeding: A Guide to Action" (MOH, 2002). The 2004 figures are taken from Plunket data. Comparisons between these figures and those from 1997 to 2002 need to be made with care because the ages used for the breastfeeding rates are different. The six week figures for 2004 use data for babies aged between two and six weeks (rather than between five and six weeks) therefore the figures cover a longer time span. The figures for the three month time span cover 10-15 weeks (as opposed to the study period which covered 11-15 weeks), and the figures for six months cover a time span of 16 weeks to seven months (as opposed to the study period which covered a time span of four to six months.

Figure 7: Exclusive / Full Breastfeeding Rates for the Years 1997 – 2002, 2004, Compared to Ministry of Health Targets.



While care needs to be taken when extrapolating figures, as other factors may influence breastfeeding rates and trends, it appears that the rates for exclusive/full breastfeeding are unlikely to be reach the targets set for 2005. In the years from 1997 to 2002, the rate of exclusive/full breastfeeding for babies aged 5-6 weeks had fluctuations around 65 percent. In 2004 the rate reached 67.3 percent using a wider age range for the babies. The inclusion of a lower age could lead to higher

breastfeeding rates. Even 67.3 percent is well short of the 2005 target of 74 percent in 2005 suggesting that this target appears to be unrealistic. It may be that the Baby Friendly Hospital Initiative assists with the meeting of this target, but this cannot be assessed until most of the District Health Boards have received Baby Friendly Accreditation. Interviewed staff at District Health Board hospitals stated that they were expected to have an exclusive breastfeeding discharge rate of 75 percent. It takes six weeks for breastfeeding to adequately establish so many women may well find that they are unable to achieve adequate initiation in this time. A more realistic target might allow a drop-off of around five to ten percent. In order to assist women to breastfeed over these critical few weeks, there needs to be breastfeeding support that they can access easily. The target of 90 percent by 2010 is suggesting an increase of 16 percent from the previous target. Once again this appears to be very unrealistic.

In the years from 1997 to 2002, the rate of exclusive/full breastfeeding for 11-15 weeks rose slightly (48.5 percent to 51.5 percent). For 2004, the breastfeeding rate for this age group reached 55.3 percent using a different age range. This rate for 2004 is still almost two percent short of the target. The increase in the exclusive breastfeeding target rate for three month old babies from 57 percent in 2005 to 70 percent in 2010 is an increase of 13 percent over five years. This is a very large increase over a short time period and appears unrealistic given the observed trend during the study period.

For the exclusive/full breastfeeding rates for four to six months, once again the trend has been moving very slowly with an increase of approximately 3.5 percent over the years of 1997 to 2002 (the rate increased from 17.4 percent to 20.9 percent). Given the exclusive/full breastfeeding rate of 23.5 percent for 2004, this target has been exceeded (once again the time period for the 2004 figures is different to the time period for the study period as discussed above). It is therefore possible that the target for 2010 of 27 percent exclusive/full breastfeeding may be met.

Influences on Breastfeeding Trends

Many factors or health determinants impact on breastfeeding rates. When looking at Dalgren and Whithead's model (NHC 1998, p21), it can be seen that there are individual lifestyle factors, social and community influences, living and working

conditions and general socioeconomic, cultural and environmental conditions. Breastfeeding promotion requires policy and societal changes about its importance and relevance. It is unlikely that policy changes will help to increase exclusive breastfeeding rates at three months by an average of 2.6 percent per annum. The document "Breastfeeding: A Guide to Action" gives action points it is hoped will bring the breastfeeding rates up to the targets. These are found in Chapter 4 and are reiterated here:

- to establish a national intersectoral breastfeeding committee
- to achieve baby friendly hospitals throughout New Zealand
- to gain active participation of Maori and Pacific whanau / family to improve breastfeeding promotion, advocacy and support
- to establish nationally consistent breastfeeding reporting and statistics
- to increase breastfeeding promotion, advocacy, and co-ordination at both national and local levels
- to ensure breastfeeding women can access ante-natal education
- to ensure high quality and ongoing post-partum care (MOH 2002, p3)

Given the current trends, the target for three month breastfeeding in 2010 is unlikely to be met. However, it will be interesting to assess what role broader social policy plays in this with the increase of paid parental leave allowing women to spend more time at home after giving birth before returning to the workforce. It will also be interesting to assess the role of the introduction of the Baby Friendly Hospital Initiative (the implementation of this policy is discussed in further depth below).

The results also show that Maori breastfeeding rates are lower than those for non-Maori. This indicates that more effort needs to be made to ensure that appropriate support and education is given to increase the amount of breastfeeding done by Maori women. In order to ensure that this support is appropriate the principles of the Treaty of Waitangi need to be utilised. According to Article Three of the treaty, Maori have the same rights as non-Maori. This means that they have the right to the same health status as non-Maori. Breastfeeding has health benefits so ideally Maori should have the same level of breastfeeding as non-Maori. In order to achieve the same breastfeeding status for Maori as non-Maori the first two articles need to be utilised. Implicit within the first two articles are the concepts of partnership and participation. Partnership means working together with iwi, hapu, whanau and Maori communities to develop strategies for positive Maori health outcomes and appropriate health and

disability support services. Participation means involving Maori at all levels of the health sector in planning, development and delivery of services (Pomare, Keefe-Ormsby et al. 1995). If New Zealand is serious about improving Maori breastfeeding rates we need to engage with Maori and actively work with them to improve the situation. This is recognised at the government level. The document "Breastfeeding: A Guide to Action" states as one of the Action points:

> "to gain active participation of Maori and Pacific whanau/family to improve breastfeeding promotion, advocacy and support" (MOH 2002 p 3).

The other interesting finding is that the mothers who attended a clinic in a more deprived area were less likely to breastfeed. This finding is backed up by literature which found that if women are of lower socio-economic status and have less education than their counterparts, even though they may initiate breastfeeding, they are less likely to continue it (Flight and Adam, 1986; Msuya, Harding et al., 1990; Milligan, Pugh et al., 2000; Birenbaum, Vila et al., 1993). Ways of improving breastfeeding rates with women of lower socio-economic status seem to involve providing more support. One author comments that in order to further support these women, there needs to be strong collaboration between professionals to ensure that the support is the most effective (Dobson and Murtaugh 2001).

Whilst breastfeeding requires societal support it also requires policy support. The next section discusses one element of breastfeeding policy and the role it has in the promotion of breastfeeding.

Policy Influence on Trends

One of the social and community influences is policy. There are many policies that impact on breastfeeding rates – these include social policies such as paid parental leave. There is also specific breastfeeding policy. This next section will discuss one small element of breastfeeding policy – the District Health Board's breastfeeding policies for their maternity hospitals. The reason that this area was examined is that the District Health Boards are using the Baby Friendly Hospital Initiative as the basis for their policies (see Chapter 3 for a further discussion) and an appropriate version of

this is to be rolled out to the community, for implementation by community health organisations. It is hoped that by examining the initial stage of this programme – the Baby Friendly Hospital Initiative, lessons can be learnt ready for the implementation of the next stage – the Baby Friendly Community Initiative.

For this research six lactation consultants were interviewed to assess their breastfeeding policy. All six sent the researcher copies of their breastfeeding policies. For all of them, the motive for the policy was to obtain or retain Baby Friendly Hospital accreditation. Details of their comments can be found in Chapter 5.

All of the policies are very detailed and long. The policies are not included in this thesis as the hospitals that took part in this research would be able to be identified which may compromise their job. However, it appears that the hospitals also have a summary of the policy in poster form – this is most often in the form of the Ten Steps (see Chapter 4, p 49 for details). Many hospitals also have their breastfeeding policies on their website and these are available to be downloaded from the internet.

Many of the respondents stated that while they had a policy, there were difficulties getting it to work to the optimum. Hogwood and Gunn make the point that perfect policy implementation is unattainable and they provide a framework for understanding this (Hogwood and Gunn 1984). The difficulties of implementing the Baby Friendly Hospital Initiative will now be discussed in detail, using Hogwood and Gunn's framework.

1. Circumstances external to the implementing agency impose crippling restraints

Some of the obstacles to implementing policy are outside of the control of the administrators of the policy. This is because they are external to the agency and may include physical or political factors (Hogwood and Gunn 1984). With the implementation of the breastfeeding policy, it was mentioned by a couple of the interviewees that they felt powerless to overcome the requirement of a breastfeeding discharge rate of 75 percent. They felt that due to the circumstances surrounding the women and babies (no antenatal care, very sick women and/or very sick baby) they were being set an unrealistic target.

2. There is inadequate time and resources made available to the programme

This requirement partially overlaps the previous one as it often comes within the category of external constraints. However, policies that are politically or physically viable may still fail to achieve their stated aims. One of the most common reasons for this is that results are expected too soon when attitudes and behaviours are involved (Hogwood and Gunn 1984). This was alluded to by one of the respondents. She said that getting the policy was only one part of the equation. The other part was getting the staff to change their practice and such compliance with the policy took time.

In the case of some of the hospitals the lactation consultant alluded to inadequate time and resources. Many respondents stated that there was difficulty ensuring that the staff received the required amount of education. This was due to a number of reasons including financial restrictions or inadequate time set aside for staff education.

3. The required combination of resources is not available

This condition follows on from the previous one. Not only are the resources required but also they are required at the right time during the implementation process and in the right combination. Once again respondents alluded to this with comments about the lack of personnel to type up the policy so that it was no longer in draft form. Another respondent stated that while the hospital was happy for the staff education to occur, the building for staff education was currently undergoing refurbishment – therefore the education was difficult to achieve within the desired timeframe.

4. The policy is not based upon a valid theory of cause and effect

Policies may be ineffective not because of bad implementation but because the underlying understanding of the problem may be inadequate (Hogwood and Gunn 1984). Within the hospital, the underlying understanding of the policy is that is that undertaking the Ten Steps and not introducing the baby to formula will impact positively on their breastfeeding discharge rates. This is a valid theory of cause and effect. However, within the Ministry of Health is an assumption that the Baby Friendly Hospital Initiative will improve the breastfeeding rates for the target ages of six weeks, three months and six months. This is assumed given that their document, "Breastfeeding: A Guide to Action" has as one of its goals "to achieve baby friendly

hospitals throughout New Zealand" (MOH 2002). Whilst it may have an effect, there is also the likelihood that broader factors impact on the breastfeeding rates. Firstly the Baby Friendly Hospital Initiative impacts initiation but does not impact continuation of breastfeeding. Other factors such as societal factors, socioeconomic status and support have more of an impact on continuation. The Baby Friendly Hospital Initiative is not the only factor that impacts on breastfeeding initiation rates as well. It could be supposed that the government policy of paid parental leave also positively influences breastfeeding initiation, as women are able to stay home from work and feed the baby when necessary.

5. The relationship between cause and effect is indirect and there are intervening links

It has been argued that policies that depend upon a long sequence of events are difficult to implement, as the longer the chain, the more numerous the relationships between the links and the more complex implementation becomes (Hogwood and Gunn 1984). This does not appear to be an issue with the implementation amongst the hospitals of breastfeeding policies. The relationship between cause and effect appears to be direct.

6. There are dependency relationships

For perfect implementation a single implementing agency is necessary and if there are other agencies, these are minimal in number and importance (Hogwood and Gunn 1984). With the hospital policy, there were difficulties with dependency relationships. These relationships tended to be with Lead Maternity Carers such as independent midwives. There was a need to ensure that they all understood the policy and adhered to it. However, in some areas there were a larger number of independent lead maternity carers so the logistics of even communicating the policy to them was difficult. It was also difficult to ensure that they adhered to the policy when the local District Health Board had no jurisdiction over their practice.

7. There is lack of understanding of, and agreement on, objectives

For perfect implementation, there is a requirement that there is complete understanding and agreement of the objectives and that this occurs all the way through the implementation process.

It appears that in the hospitals there are clear specified and documented objectives but these are not all the objectives. There are also unwritten ones that the lactation consultants discussed in the interviews. These are ones that are expected from accredited Baby Friendly Hospitals and include an expected discharge rate of 75 percent exclusive breastfeeding. As these are not stated in the hospital documentation it is unlikely that all the staff are aware of these other objectives.

There was also a disagreement about the objective of 75 percent exclusive breastfeeding rate on discharge. Whilst some hospitals were able to achieve it easily, others felt that it was unrealistic given the health, culture and view of breastfeeding by the women who used their facility.

8. The tasks are not fully specified and in correct sequence

For precise implementation, there needs to be a plan that specifies in complete detail and perfect sequence the tasks that need to be performed by every participant in the process (Hogwood and Gunn 1984). However, there also needs to be room for improvisation and discretion as things can change even in the most perfectly planned implementation.

None of the respondents commented about this issue.

9. There is imperfect communication and co-ordination

According to Hogwood (Hogwood and Gunn 1984), perfect communication and co-ordination can only be achieved if there is a unitary administrative system with no conflict or compartmentalism within. In a hospital this is exceedingly unlikely to occur.

Many of the respondents commented about communication issues. These issues included systems issues for example the time lapse between formulating the policy and then making it available for staff to access, or administrative staff being made redundant, therefore the policy not being typed up and accessed by the nursing and midwifery staff.

There was often inadequate time given to staff education about the policy as well – so that staff did not receive the education that was required. There were a number of reasons for this including pressure to ensure that the staff received all the other education they required, as well as financial restrictions limiting the education available.

Other communication difficulties revolved around the high turnover of staff. Often, staff would have received their education about the policy then they would leave meaning that the education cycle had to begin all over again in order to ensure that the new staff understood the policy.

Short term contract staff (bureau nurses) were also an issue as they were asked to help in the wards when it was busy therefore they would not have enough time to read any relevant policies.

Another area that makes communication difficult is whether the staff understand the policy. All the policies are written in high-level language, and are at a Grade 12 Flesch-Kincaid level. It is recommended that most standard documents aim for a Grade of 7.0 – 8.0 (that is an American child in grade eight – approximately a 12 year old's reading level). Their Flesch Reading Ease Score is also low at less than 50 percent (it is recommended that this score should be approximately 70 percent or above).

10. Those in authority are unable to demand and obtain perfect compliance

For perfect implementation, any resistance to policy would be identified by the administration and then forestalled by total control. It presumes that those 'in authority' are also in total control and can obtain immediate and total compliance and co-operation (Hogwood and Gunn 1984). However, this is never the case and this is possibly the least attainable condition for perfect implementation.

This point was borne out by the interviewee's feedback. They found that the staff were resistant to change and as a result they were unlikely to put the policy into practice immediately. Changing the attitudes of staff towards policy took time and

when the interview was given, they had not changed their practice to reflect the new policy.

In a bigger hospital the compliance becomes even more difficult as there are more staff implementing the policy, therefore there are more challenges to the implementation process as potentially there is a greater number of staff who are resistant to it.

Other Stages to the Policy Cycle

According to Howlett and Ramesh (2003) policy implementation is just one stage of the policy cycle. The policy cycle consists of agenda setting, policy formulation, decision-making, policy implementation and policy evaluation. Agenda setting refers to the process in which the problem comes to the attention of the government. In this case the barriers and issues around breastfeeding came to the government through a number of sources – World Health Organisation, lobby groups such as La Leche League, international research on the benefits to health of breastfeeding. Policy formulation refers to the process by which the policy options are formulated within government and decision making refers to the process in which governments adopt a course of action. As already discussed in Chapter 3 the policy formulation and decision making was not transparent. Obtaining information around the formulation of the document "Breastfeeding: A Guide to Action" was met with barriers and the document has been criticised as it had a lack of peer review and no acknowledgement of the authors. However, the formulation of the Baby Friendly Hospital Initiative appears more transparent with guidelines from the World Health Organisation. Examining the background to this would be an interesting project that goes beyond the scope of this thesis. The final stage of the policy cycle is policy evaluation. This involves the monitoring of the results of the policy. Evaluation of the Baby Friendly Hospital Initiative is only just beginning on the first of the hospitals that were accredited. As this credentialling is only done once every three years, it is possible that the standards slip between credentialling cycles. Ideally a continuous quality improvement cycle that seeks to promote ongoing improvement in practices and provide an environment within which continual learning occurs would be better than a credentialling exercise performed every three years. Such a credentialling system has

the aim of reaching or maintaining minimum standards and when the minimum standard is reached there may be complacency in the system (Seddon, 2003).

As can be seen here, breastfeeding policy can influence breastfeeding rates. However, it is important that implementation procedures are carefully considered in order for it to have the most impact on breastfeeding rates.

Strengths and Weaknesses of this Study

Strengths

This study has many strengths. These are highlighted below.

1. Large Population Study

This study examines the data from the population who use Plunket services. At five to six weeks this is 55.6 percent of the population and rises to 87.3 percent around the three month mark but drops off slightly at four to six months to 85.2 percent. This is the largest collection of breastfeeding data in the country. It seems likely that the findings apply to the whole population.

2. Definitions

The breastfeeding definitions are clear and differentiate between exclusive, full and partial breastfeeding.

3. Data collection points

The study also utilised clear data collection points. Therefore the data can be compared between the years of 1997 to 2002.

4. Independent Researcher

Because the researcher undertaking this study was not employed by any of the District Health Boards, the participants of the qualitative part of the study felt willing to share openly and honestly share their feelings about the implementation of their breastfeeding policy.

5. Ethical Considerations Accounted for Prior to Interview of the Participants

As the participants knew that they were not going to be identified in the study they were willing to be honest about how they felt about the implementation of the Baby Friendly Hospital Initiative in their area.

Weaknesses

1. Bias

A potential bias is that the Plunket staff misinterpret breastfeeding definitions and therefore wrongly enter the data. It is unclear how this wrong interpretation might affect the results as it could be assumed that errors of interpretation occur and bias data both positively and negatively. This could come from difficulty in taking a full breastfeeding history from the mother. Another potential bias is that exclusive breastfeeding may be overestimated as staff ask how the mother is breastfeeding over the past 24 hours.

2. Comparison of these data with other data

These data have a variable age of collection. For example to assess the six month breastfeeding rate, the data are collected at four to six months. In this study, these ages are highlighted but when the data are compared to other reports, this is difficult – for example the Ministry of Health and World Health Organisation target ages six weeks, three months and six months and it is not clear what range is allowed.

3. Data Not Representative of the Total Population

The Plunket data does not assess the whole population of New Zealand infants aged zero to one year of age, and the percentage of the population that it does assess, varies at different ages. At six weeks Plunket sees approximately 56 percent of the population and this rises to 87 percent at 11-15 weeks. However, the percentage of Maori seen at these ages is less at 44 percent for six weeks and 68 percent for 11-15 weeks. It is possible that the results over estimate the rate of breastfeeding in the whole population and the Maori population in particular.

4. Difficulty Comparing These Data to Previous and Subsequent Data

It is hard to compare these data with previous data or data collected after this study. This is for three reasons. The first is that the definitions for the data have changed. Prior to 1990 there were no set definitions for breastfeeding so the data prior to this

point can only be examined in terms of "any breastfeeding". The second reason is that the collection points for the data are different. Breastfeeding data used to be gathered at the age of first contact. This age could fluctuate depending on when the Plunket nurse first went to visit the mother and baby. Latterly in the 1990s there has been a change in maternity services making the age that the mother and baby is discharged to Plunket later. Thirdly, since these data were collected a new Information System is used by Plunket, which means that the six week data are collected between two to six weeks rather than five to six weeks (as is the case for these data).

5. Study Not Able to Examine Some Ethnic Groups' Breastfeeding Rates

For ethnicity, the study examined Maori, Pacific and "Other". The "other" included are ethnic groups that were not covered by Maori or Pacific. This means that breastfeeding rates in Asians and other ethnicities that are becoming a larger proportion of the population cannot be examined separately.

6. Assessment of Deprivation

The deprivation of the population was assessed by the Plunket managers on the location of the clinic in the area. This has two potential problems. The first is that it relied on the judgement of the managers of the state of deprivation in the area of the clinic. Whilst deprivation index maps gave them a general guide, these may have been lacking in the fine detail that was required for accuracy. The other issue with this is that the managers assessed the clinic location and it is possible that the families that attended that clinic lived in a more or less deprived area than the clinic. Crampton et al also note that the NZ Dep. describes general socio-economic deprivation in an area and does not describe the deprivation of an individual therefore it is difficult to accurately say that because a family uses the clinic in a particular deprivation area they have that deprivation level.

7. Small Number of Hospital Staff Interviewed

Not all lactation consultants responsible for implementing the Baby Friendly Hospital Initiative were interviewed. This means that as with any qualitative study, their comments and perceptions cannot be generalised to all hospitals involved in the implementation of this policy. However, themes can still be obtained and lessons can be learnt from their comments.

Unanswered Questions and Future Research

Whilst the quantitative results provide some insights, they leave unanswered questions as to how to increase breastfeeding rates to the level that the Ministry of Health wants. There has been much policy change in the area of breastfeeding. This change has occurred in the areas of workplace policies (longer paid parental leave) as well as in the area of hospital policy. As well as these two government driven policy changes, there are also other factors such as businesses trying to be breastfeeding friendly and ongoing media drives. Because more than one initiative occurs at the same time, it is hard to assess what impact each has had on breastfeeding rates.

The Baby Friendly Hospital Initiative based breastfeeding policy emphasises initiation rather than continuation. Therefore when Baby Friendly Community Initiative comes into being, there will need to be further research on policy implementation for community organisations. This would also be a good time to re-assess the breastfeeding rates at three and six months to assess whether they continue to remain relatively stable.

As more evaluation on Baby Friendly Hospitals occurs, it would be useful to analyse the process in depth to assess whether the programme is effective and whether the credentialling cycle is the most appropriate way of assessment.

Conclusion

This chapter has discussed the current breastfeeding trends as well as highlighting one of the factors that influences breastfeeding – the hospital policies revolving around implementing the Baby Friendly Initiative. As has been discussed, "any" breastfeeding over the study period did not increase appreciably for the different age groups. It has also shown that Maori has a lower breastfeeding rate than "other" or Pacific nation's people. This study has also highlighted the difficulties of implementing policy in order to change the breastfeeding rates.

However, it has left many unanswered questions. The discussion has brought to light a number of recommendations that could be utilised to enhance any future breastfeeding policy implementation. These are detailed in the next chapter.

CHAPTER 7 - RECOMMENDATIONS

This chapter will make some recommendations and the rationale behind them. It will examine them in two categories – the first category is concerned with the breastfeeding trends and the second is concerned with breastfeeding policy implementation.

Recommendation 1

The Ministry of Health targets are reassessed and reset to be more achievable. These targets would also acknowledge the range of age in which the breastfeeding data are obtained

More reasonable targets would be:

- to increase the breastfeeding (exclusive and fully) rate at four to six weeks to 71% by 2006 and to 78% by 2010
- to increase the breastfeeding (exclusive and fully) rate at 10 - 15 weeks to 57% by 2006 and to 64% by 2010
- to increase the breastfeeding (exclusive and fully) rate at four to six months to 21% by 2006 and to 27% by 2010

Rationale

For breastfeeding at six weeks the rates for exclusive/full breastfeeding has not increased over the study period of 1997 to 2005. It is possible that paid parental leave and the Baby Friendly Hospital Initiative breastfeeding rates may increase slightly. The proposed target allows for an approximate increase of 1.5 percent per year (from 2002) given these new policy initiatives.

The way of collecting breastfeeding information occurs over a range of ages and is not point specific therefore the range of age over which the data are collected needs to be expanded.

In 1997 the exclusive/full breastfeeding rate for 11-15 weeks was approximately 53 percent with a small annual increase. The proposed figures above have allowed for an

approximate increase of 1.5 percent per year (from 2002) given these new policy initiatives.

The Ministry of Health figures for six months have been left unchanged as they appear to be achievable.

Recommendation 2

The Ministry of Health and local District Health Boards work with Maori to assess how to best promote and support breastfeeding for them.

Rationale

Across all ages Maori infants have lower breastfeeding rates than non-Maori infants. One of the aims of public health is to ensure that all New Zealanders have the same status of health and currently Maori have a lower life expectancy to non-Maori. Breastfeeding is one strategy that promotes health.

Recommendation 3

Ensure that communities that are more deprived (NZDep. 8-10) receive more breastfeeding support in order to improve their breastfeeding rates.

Rationale

People who live in a NZ Dep. 8-10 have lower breastfeeding rates than people who live in Dep 1-7. Professional support has also been shown to significantly make a difference to breastfeeding initiation. Any breastfeeding support that goes to such areas needs to be accessible, affordable and appropriate. Such accessible affordable and appropriate breastfeeding support might need to be given via a free home visiting lactation consultant programme, or in the case of Maori, by Maori Health providers.

This thesis has also examined the implementation of hospital policy and the barriers to this. These next few recommendations will examine ways to enhance the implementation process.

Recommendation 4

The discharge rate from the hospitals of exclusive breastfeeding needs to be negotiated between each hospital and the Baby Friendly Hospital Initiative assessment committee.

Rationale

Whilst the breastfeeding discharge rate of 75 percent exclusive breastfeeding is achievable for many hospitals, for others there are many factors surrounding the women and babies that impact on their ability to achieve this rate. These factors include whether the women received any antenatal care and the state of health of the women and babies. The Baby Friendly Hospital Assessment Committee needs to take these factors into consideration.

Recommendation 5

The denominator for breastfeeding discharge rates is clarified.

Rationale

Amongst the Lactation Consultants interviewed, there was confusion over the denominator for the breastfeeding discharge rates. They were puzzled whether it included mothers and babies discharged to another maternity facility and whether it included babies that required formula for a specific medical condition.

Recommendation 6

Adequate time and resources are allowed for hospitals to achieve Baby Friendly Hospital accreditation.

Rationale

Changing staff attitudes to new policies and procedures takes time and is a process that cannot be rushed. In any behavioural change there needs to be time to plant the idea and allow it to take root. It is a process that cannot be hurried.

Hospitals also need to ensure that they have adequate resources for implementation. Such resources may include personnel, equipment, facilities and stationery.

Recommendation 7

The Ministry of Health and government continue to explore additional ways of improving breastfeeding rates.

Rationale

Whilst it has been shown that the Baby Friendly Hospital Initiative can positively affect breastfeeding rates, it is not the only factor. As discussed in Chapter Two, there are many other factors that impact on Breastfeeding rates. These factors include socio-economic status, support when the mother and baby are discharged from the hospital and ongoing paid parental leave. When the mother and baby are discharged from hospital (at approximately 48 hours) breastfeeding is not established and there are further initiation problems that require ongoing support for the mother and baby to overcome.

It is pleasing to note that the Ministry of Health is bringing in the Baby Friendly Community Initiative and this may help to improve the breastfeeding rates particularly at three and six months.

Another factors that may be having a positive effect on current breastfeeding rates is paid parental leave. If the government wants to ensure that the exclusive breastfeeding targets are reached for 2010, paid parental leave for six months may assist.

Recommendation 8

The Breastfeeding Policies are written in such a manner that they are easily understandable and can be understood by someone with a reading age of 12 years.

Rationale

The policies were usually written in high level language making it difficult for some staff to understand what was required of them in order to adhere to the policy.

Recommendation 9

Lead Maternity Carers understand and adhere to the breastfeeding policies when they are working within a specific District Health Board.

Rationale

Lead Maternity Carers usually work independently of the hospital and therefore do not come under the hospital's jurisdiction. A possible way of ensuring that they also follow the recommendations of a Baby Friendly Hospital is to legislate within Section 88 of the Health and Disability Act that Lead Maternity Carers work within the principles of the Baby Friendly Initiative (hospital or community).

Recommendation 10

The time lapse between the formulation of a policy, and getting it out to staff is kept at a minimum.

Rationale

Often there was communication breakdown with getting a policy to staff. In order to ensure that it happens as quickly as possible, District Health Boards need to ensure that they have the ability to type it and proof it as soon as possible. They also need to ensure that they have an implementation plan to ensure that staff know, understand and use the policy as soon as possible.

Recommendation 11

District Health Boards have attractive employment packages for nurses and midwives in Maternity facilities.

Rationale

Some facilities often had to use casual agency nurses to cover the work in the maternity facilities resulting in such nurses not knowing the hospital policies and therefore not adhering to them. Whilst this has been an issue with a shortage of nurses in New Zealand, it is hoped that the new employment agreements may help to resolve this issue by encouraging New Zealand trained nurses to stay and work for District Health Boards. Other ways of assisting with staff retention is by having a good orientation and ongoing education programme.

CHAPTER 8 - CONCLUSION

This thesis had the aims of describing breastfeeding trends in New Zealand from 1997 to 2002 for babies at ages six weeks, three months and six months. It further described these data by ethnicity and socio-economic status. It compared these rates to the Ministry of Health's Breastfeeding targets. It also examined the role of public policy on breastfeeding, in particular it looked at the implementation of the Baby Friendly Hospital Initiative.

Breastfeeding is an important public health activity as it positively impacts on the health of babies and mothers. It provides the infant with the ideal nutrition for growing and developing. It also decreases the risk of some infectious diseases and possibly protects against atopy and may decrease the prevalence of childhood obesity. Additional benefits for the infant may include increased intelligence and increased bonding between the mother and baby. For mothers, it decreases the risk of post-partum haemorrhage, has a contraceptive effect and long term decreases the risk of ovarian and breast cancer. Less major benefits are that it is good for society as it results in fewer hospitalisations therefore results in less money being spent on the health budget. It is also good for the environment as it is an efficient use of resources.

Many factors influence breastfeeding. Some of these factors influence initiation whilst others influence continuation. These factors include personal ones such as the mother planning to breastfeed, the mother's ethnicity, socio-economic status, maternal age and education, the type of birth of the baby, maternal smoking and maternal weight. Societal factors also impact on breastfeeding and these include support for the breastfeeding mother from family, society (such as baby friendly workplaces) and public policy initiatives. Within New Zealand there have been trends that have also impacted on breastfeeding rates. These have included age of having children, population changes and health system changes.

A theme that has re-occurred throughout this thesis has been the importance of breastfeeding definitions. Without good definitions it is difficult to assess breastfeeding behaviour and compare it over time and with other countries. This

thesis attempted to compare New Zealand rates of breastfeeding internationally but due to a lack of definitions in other countries it was problematical.

Policy is one of the influences on breastfeeding rates. There have been many policies launched internationally and within New Zealand that have impacted directly on breastfeeding. These have included The International Code of Marketing of Breastmilk Substitutes, the Innocenti Declaration and the Baby Friendly Hospital Initiative (WHO 1981, 1990, 1992). New Zealand has adopted these policies. Other indirect policies have also impacted on breastfeeding. One that potentially could impact significantly on breastfeeding rates is the provision of paid parental leave for three months.

Policy is one influencing factor on breastfeeding rates. This thesis examined the breastfeeding rates and compared the overall rates with the Ministry of Health targets set in their policy document "Breastfeeding: A Guide to Action" (MOH 2002). It appears that it is unlikely that New Zealand reached the Ministry of Health breastfeeding target rates for exclusive/full breastfeeding for six weeks and three months for 2005. There are many reasons for this but one possible reason is that the targets were unrealistic given the trend of breastfeeding rates remaining basically static over the study period for these two age groups. The target for exclusive / full breastfeeding for 6 months is likely to have been met.

As expected, the rates of breastfeeding for Maori and Pacific were lower than the rates for other. Also the rate for families that attended Plunket clinics in a lower socio-economic area were lower than for those families that attended a clinic in a higher socio-economic area.

There are many players responsible for encouraging and supporting breastfeeding. Implementing policy and ensuring that it links together is likely to be complicated. The difficulty of implementing policy is highlighted in this thesis through the interviewing of six lactation consultants in District Health Boards who have the responsibility of implementing the Baby Friendly Hospital Initiative. This portion of the thesis used a qualitative research method. However, it did not use an in-depth approach as the aim was to only highlight possible implementation issues.

There were many problems and barriers to implementing the Baby Friendly Hospital Initiative. Some of the interviewed lactation consultants commented that their District Health Board had a lack of time and resources, there were a number of independent midwives who used the facility but did not necessarily adhere to the facility policies, some felt that the objective of an exclusive breastfeeding discharge rate of 75 percent was unrealistic and there was often poor communication so that staff were unaware of the implications of the policy. The communication issues revolved around a lack of resources to educate the staff, high staff turnover and short term contract staff. Many of the policies were also written in "high-level" language.

This thesis made a number of recommendations for improving breastfeeding rates. However, when trying to impact on health outcomes such as breastfeeding there are always a number of influencing agencies and policies. Whilst recommendations may assist with improving the breastfeeding rates, there are always other influencing factors that cannot be controlled.

This thesis leaves a number of unanswered questions. These may be researched at a later date and include:

1. **How else can breastfeeding rates be improved?**

This thesis has described what the breastfeeding rates are currently. While the Ministry of Health document makes suggestions on how to improve breastfeeding rates, there are likely to be other issues that also assist to improve breastfeeding. Some of these may include supporting businesses to be breastfeeding friendly and encouraging the extended family to be supportive of breastfeeding.

2. **What impact will the Baby Friendly Community Initiative have on breastfeeding rates?**

This policy has not, as yet, been launched. It has the potential to impact on the continuation rates of breastfeeding. Ideally an evaluation will be set up and conducted after approximately a year of it being launched.

3. **How can New Zealand encourage a breastfeeding culture?**

In order to further enhance breastfeeding New Zealand needs to examine ongoing strategies that ensure that breastfeeding is encouraged. These might include media

drives explaining the benefits of breastfeeding as well as promoting it and businesses being breastfeeding friendly.

4. What impact will paid parental leave have on breastfeeding rates?

It is to be expected that paid parental leave should increase breastfeeding rates as it will allow the mothers to stay home for the first three months after the birth of their baby. Further research is required into this.

Whilst this research leaves a number of unanswered questions, it has shown that many factors influence breastfeeding rates. It has also shown that while the breastfeeding has not increased for infants aged six weeks and three months, exclusive/full breastfeeding has increased for infants aged six months. It has also suggested ways that breastfeeding rates could be further improved.

APPENDIX 1

Breastfeeding definition adopted by the Royal New Zealand Plunket Society.

- **Exclusive breastfeeding**: child has never had any water, formula or other nutrients. Only breast milk and prescribed medicines have been given from birth.
- **Full breastfeeding**: at the contact age, no liquids or solids, except water or medicines are given
- **High breastfeeding**: at the contact more than 80 percent of feeds (with all nutrients considered as "food") are breastmilk
- **Medium breastfeeding**: at the contact age, 20-80 percent of feeds are breastmilk
- **Low breastfeeding**: at the contact age, less than 20 percent of feeds are breastmilk

  NB – Sometimes High, Medium and Low Breastfeeding definitions are grouped together as "Partial Breastfeeding"
- **Artificial feeding**: at the contact age, the baby receives no breastmilk.

Breastfeeding behaviour is measured at the time of the Plunket staff contact and it reports from the mother for the previous 48 hours. As can be seen above, exclusive breastfeeding represents an historic view of breastfeeding practice since birth (Plunket 1999).

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